REPORTS

OF THE

INSPECTORS OF MINES

OF THE

ANTHRACITE COAL REGIONS OF PENNSYLVANIA,

FOR THE

YEAR 1885.

HARRISBURG:
EDWIN K. MYERS, STATE PRINTER.
1886.

VIRTUE
LIBERTY AND
INDEPENDENCE

CONTENTS.

Page.

Report of Inspector, First District, ... 1
Report of Inspector, Second District, ... 35
Report of Inspector, Third District, ... 50
Report of Inspector, Fourth District, ... 109
Report of Inspector, Fifth District, ... 176
Report of Inspector, Sixth District, ... 198
Report of Inspector, Seventh District, ... 229

FIRST DISTRICT,

Comprising Lackawanna, Wayne, and Susquehanna Anthracite Coal Field.

OFFICE OF THE INSPECTOR OF MINES,
SCRANTON, PA., *April 14, 1886.*

Honorable J. SIMPSON AFRICA, *Secretary of Internal Affairs, Commonwealth of Pennsylvania:*

SIR: I have the honor of herewith submitting my annual report as inspector of coal mines for the First anthracite district, for the year ending December 31, 1885, in compliance with section seven, article two, of an act of Assembly, approved June 30, 1885, entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith."

In the collection of necessary statistics for this report, I had considerable trouble, inasmuch as many of the operators were very negligent in furnishing proper information. Not until I called their attention to the law could I get the requisite information. In my report, which is condensed and tabulated, you will find all statistics that were furnished me.

I complied with your request and filled blanks furnished from your office, as far as I possibly could, but they do not cover the points mentioned in the mine law of June 30, 1885. Under the provisions of that law, there was a new district created out of a portion of the Eastern and Middle districts, which is now called the Second district, a mine inspector for which was appointed last October. The list of deaths and accidents in my report is, up to that date, as having occurred in the old Eastern district, but all the coal mined in the portion taken out of the Eastern district is returned in Mine Inspector McDonald's report. You will also find hereto attached the answers to questions which I requested each operator to send me. I send these for your information, as there are several questions and answers which are not embodied in the main report furnished your department, and you may make use of them.

The mines in this district are in excellent condition, and are still improving in ventilation and safety. I have met with a very prompt compliance with all demands and suggestions made by me in having the provisions of the new mine law made effective, and it is hoped that living up strictly to its provisions that the health and safety of persons employed in and about the mines will steadily improve.

The following is a summary of some of the more important statistics:

Amount of coal mined in 1885.	7, 258, 853	tons.
Amount of coal shipped in 1885, ...	6, 747, 157	"
Tons of coal produced per life lost, ...	134, 423	"
Tons of coal for each personal injury, ...	37, 416$\frac{8}{10}$	"
Ratio of employés per life lost, ...	364	
Ratio of employés per personal injury, ...	101	
Tons of coal produced for each employé in mine, . .	523	"
Tons of coal produced for each employé, ...	367$\frac{94}{100}$	"
Tons of coal produced for each widow, ...	234, 157	"
Tons of coal produced for each orphan, ...	68, 480	"

Respectfully submitted.

PATRICK BLEWITT,
Inspector of Mines, &c.

TABLE 1. *—Showing location of collieries in the First Anthracite Mine District.*

Name of Colliery.	Name of Operator.	Location—County.	Name of Superintendent.	Post-Office Address.
Archbald Shaft,	Del., Lacka. and West. Railroad Company,	Lackawanna,	Benjamin Hughes,	Scranton.
Bellevue Shaft,	do. do. do.	do.	do. do.	do.
Bellevue Slope,	do. do. do.	do.	do. do.	do.
Brisbin Shaft,	do do. do.	do.	do. do.	do.
Bridge Mines,	Bridge Coal Company, Limited,	do.	A. B. Stevens,	do.
Brennan's Mines,	Thomas Brennan,	do.	Thomas Brennan,	Carbondale.
Continental Shaft,	Del. Lacka. and West. Railroad Company,	do.	Benjamin Hughes,	Scranton.
Central Shaft,	do. do. do.	do.	do. do.	do.
Cayuga Shaft,	do. do. do.	do.	do. do.	do.
Capouse Shaft,	Lackawanna Iron and Coal Company,	do.	Reese G. Brooks,	do.
Coal Brook Mines,	Delaware and Hudson Canal Company,	do.	A. H. Vandling,	do.
Dunn Mine,	Pennsylvania Anthracite Coal Company,	do.	John Jermyn,	do.
Dodge Mines,	Del., Lacka. and West. Railroad Company,	do.	Benjamin Hughes,	do.
Diamond, No. 2, Shaft,	do. do. do.	do.	do. do.	do.
Diamond, Tripps Shaft,	do. do. do.	do.	do. do.	do.
Diamond, Tripps Slope,	do. do. do.	do.	do. do.	do.
Dolph Mine,	Edward Dolph,	do.	Edward Dolph, Jr.,	do.
Eddy Creek Shaft,	Delaware and Hudson Canal Company,	do.	A. H. Vandling,	do.
Eaton Mines,	Jones, Simpson & Co.,	do.	Edward Jones,	Archbald.
Edgerton Mine,	Edgerton Coal Company, Limited,	do.	Andrew Clarkson,	Jermyn.
Erie Shaft,	Hillside Coal and Iron Company,	do.	W. A. May,	Scranton.
Fair Lawn Slope,	Fair Lawn Coal Company, Limited,	do.	John H. Hosie,	do.
Filer's Slope.				
Forest City Shaft,	Hillside Coal and Iron Company,	Susquehanna,	W. A. May,	do.
Glendale Mines,	Glendale Coal Company,	Lackawanna,	F. A. Beamish,	do.
Greenwood Mines,	Pennsylvania Anthracite Coal Company,	do.	John Jermyn,	do.
Green Ridge Slope,	O. S. Johnson,	do.	O. S. Johnson,	do.
Grassy Island Shaft,	Grassy Island Coal Company,	do.	C. D. Simpson,	do.
Grassy Island Shaft,	Delaware and Hudson Canal Company,	do.	A. H. Vandling,	do.
Holden Mines,	Del., Lacka. and West. Railroad Company,	do.	Benjamin Hughes,	do.
Hampton Mines,	do. do. do.	do.	do. do.	do.
Hyde Park Mines,	do. do. do.	do.	do. do.	do.
Jermyn, No. 1, Shaft,	Delaware and Hudson Canal Company,	do.	A. H. Vandling,	do.
Jermyn, No. 2, Slope,	do. do. do.	do.	do.	do.
Jermyn, No. 4, Shaft,	John Jermyn,	do.	J. J. Jermyn,	do.
Leggett's Creek Shaft,	Delaware and Hudson Canal Company,	do.	A. H. Vandling,	do.
Lackawanna Coal Company Shaft,	Lackawanna Coal Company,	do.	O. S. Johnson,	do.
Lucas, now Dixon Shaft,	Delaware and Hudson Canal Company,	do.	A. H. Vandling,	do.
Meadow Brook Tunnel,	William Connell & Co.,	do.	William Connell,	do.
Meadow Brook Shaft,	do. do.	do.	do.	do.
Mount Pleasant Slope,	William T. Smith,	do.	William T. Smith,	do.
Manville Shaft,	D. L. and W. R. Co., and D. and H. C. Co.,	do.	B. Hughes & A. H. Vandling,	do.
Marone Shaft,	Delaware and Hudson Canal Company,	do.	A. H. Vandling,	do.

TABLE I—*Continued.*

Name of Colliery.	Name of Operator.	Location—County.	Name of Superintendent.	Post-Office Address.
No. 1 Shaft,	Delaware and Hudson Canal Company,	Lackawanna,	A. H. Vandling,	Scranton.
No. 3 Shaft,	do. do. do.	do.	do.	do.
National Shaft and Slope,	William Connell & Co.,	do.	William Connell,	do.
Old Forge Shaft,	Pennsylvania Coal Company,	do.	John B. Law,	Pittston.
Oxford Shaft,	Del., Lacka. and West. Railroad Company,	do.	Benjamin Hughes,	Scranton.
Olyphant, No 2,	Delaware and Hudson Canal Company,	do.	A. H. Vandling,	do.
Pyne Shaft,	Del., Lacka. and West. Railroad Company,	do.	Benjamin Hughes,	do.
Pine Brook Shaft,	Lackawanna Iron and Coal Company,	do.	Reese G. Brooks,	do.
Pancoast Mines,	Pancoast Coal Company,	do.	George Griffin,	Throop.
Pierce Mines,	Pierce Coal Company,	do.	Edward Jones,	Archbald.
Powderly Mines,	Delaware and Hudson Canal Company,	do.	A. H. Vandling,	Scranton.
Richmond Mines,	Elk Hill Coal and Iron Company,	do.	William H. Richmond,	Dickson City.
Rackett Brook,	Delaware and Hudson Canal Company,	do.	A. H. Vandling,	Scranton.
Spring Brook Mines,	William E. Colbourne,	do.	William E. Colbourne,	Moosic.
Sibley Mines,	Elliott, McClure & Co.,	do.		
Scranton Slope,	Del., Lacka. and West. Railroad Company,	do.	Benjamin Hughes,	Scranton.
Sloan Shaft,	do. do. do.	do.	do. do.	do.
Storrs' Shaft,	do. do. do.	do.	do. do.	do.
Shaft No. 13,	Pennsylvania Coal Company,	do.	John B. Law,	Pittston.
Starks' Shaft,	do. do.	do.	do.	do.
Shaft No. 2, Dunmore,	do. do.	do.	James Young,	Dunmore.
Shaft No. 3, Dunmore,	do. do.	do.	do.	do.
Shaft No. 4, Dunmore,	do. do.	do.	do.	do.
Shaft No. 5, Dunmore,	do. do.	do.	do.	do.
Screens, Dunmore,	do. do.	do.	do.	do.
Spencer's Shaft,	A. D. & L. M. Spencer,	do.	A. D. Spencer,	do.
Taylor Shaft,	Del Lacka. and West. Railroad Company,	do.	Benjamin Hughes,	Scranton.
Von Storch Mines,	Delaware and Hudson Canal Company,	do.	A. H. Vandling,	do.
White Oak Mines,	do. do. do.	do.	do.	do.
Winton Mines,	Winton Coal Company, limited,	do.	Byron M. Winton,	Peckville.

TABLE II.—*Showing character of coal, production, number of employés, days employed, causalties, &c., in the First Anthracite Mine District, for the year, A. D. 1885.*

Collieries.	Operators.	Character of coal. (Anthracite or Semi-Anthracite. Bituminous or Semi-Bituminous.)	Drift, slope, or shaft.	Number of inside workmen.	Number of outside workmen.	Total employees.	Number of days worked inside.	Number of days worked outside.	Number of horses and mules.	Production.		Casualties.				
										Number of tons produced.	Number of tons shipped.	Killed inside.	Killed outside.	Injured inside.	Injured outside.	Total killed and injured.
Archbald,	Del., Lacka. and West. R. R. Co.,	Anthracite.	Shaft,	213	111	324	. . .	444.9	39	33,080.11	29,262.11	. .	. .	. .	. .	. .
Bellevue,	do. do. do.	do.	do.	190	159	441	. . .	130.4	65	124,680.05	119,980.05	0	0	. .	. .	. .
Bellevue,	do. do. do.	do.	Slope,	95								2	0	. .	. .	. .
Bridge,	Bridge Coal Company, limited,	do.	Shaft,	131	116	247	. . .	240.7	46	75,539	60,924	. .	1	. .	. .	. .
Brisbin,	Del., Lacka. and West. R. R. Co.,	do.	do.	251	102	353	. . .	169	49	158,245.08	148,217.18	2	. .	. .	. .	. .
Blanchard,	North-Western Coal Company,	do.	Drift,	66	50	116	. . .	91	14	12,170	11,622	2	. .	. .	. .	. .
Continental,	Del., Lacka. and West. R. R. Co.,	do.	Shaft,	266	121	387	. . .	182	56	189,315.08	182,169.08	1	. .	. .	. .	. .
Central,	do. do. do.	do.	do.	335	134	469	. . .	182.8	59	227,848.08	213,010.08	3	. .	. .	. .	. .
Cayuga,	do. do. do.	do.	do.	245	117	362	. . .	181.9	52	169,919.12	164,397.17	1	. .	. .	. .	. .
Capouse,	Lackawanna Iron and Coal Co.,	do.	do.	485	149	634	. . .	214.2	91	371,707.01	359,130.18	2	. .	. .	. .	. .
Coal Brook,	Delaware and Hudson Canal Co.,	do.	Tunnel,	452	203	655	. . .	210¾	88	228,549.18	225,333.15	1	. .	. .	. .	. .
Church,	Church Coal Company, limited,	do.	Drift,	18	12	30	. . .	200	8	14,000	4,953	. .	. .	. .	. .	. .
Dunn,	Penna. Anthracite Coal Company,	do.	Shaft, Slope,	197	89	286	. . .	169.3	31	88,296.12	87,584.12	. .	. .	. .	. .	. .
Dolph,	Dolph Coal Company, limited,	do.	Drift,	103	71	174	. . .	134½	13	23,909	23,731.06	. .	. .	. .	. .	. .
Dunmore Breaker,	Pennsylvania Coal Company,	do.	. . . . .	. . .	52	52	. . .	212⅝	4	91,070.15	93,712	. .	. .	. .	. .	. .
Dixon,	Delaware and Hudson Canal Co.,	do.	Shaft,	263	122	385	. . .	198	33	108,891.19	107,364.08	1	. .	. .	. .	. .
Dodge,	Del., Lacka. and West. R. R. Co.,	do	do.	235	104	339	. . .	182.2	87	151,443.12	145,978.12	. .	. .	. .	. .	. .
Diamond, No. 2,	do. do. do.	do.	do.	168	133	301	. . .	179	88	223,813.08	205,458.08	1	. .	. .	. .	. .
Diamond Tripps Shaft,	do. do. do.	do.	do.	176	100	276	. . .	179	51			1	. .	. .	. .	. .
Eddy Creek,	Delaware and Hudson Canal Co.,	do.	do.	313	130	443	. . .	208	39	135,193.10	124,511.13	. .	. .	. .	. .	. .
Eaton Mines,	Jones, Simpson & Co.,	do.	Drift,	198	96	294	. . .	194.3	25	86,790.11	86,630.06	1	. .	. .	. .	. .
Edgerton,	Edgerton Coal Company, limited,	do.	do.	146	61	207	. . .	166.9	17	75,126.04	73,523.18	. .	. .	. .	. .	. .
Erie,	Hillside Coal and Iron Company,	do.	Shaft,	244	104	348	. . .	202½	43	114,953.05	113,642.17	. .	. .	. .	. .	. .
Forest City,	do. do. do.	do.	do.	154	62	216	. . .	171¾	30	84,459.07	83,163.13	1	. .	. .	. .	. .
Fair Lawn,	Fair Lawn Coal Company, limited,	do.	Slope,	133	58	191	. . .	134½	16	46,146	44,945	. .	. .	. .	. .	. .
Filer's Slope,	Griffiths, Thomas & Co.,	do.	do.	132	65	197	. . .	160	17	47,575	46,717.10	. .	. .	. .	. .	. .
Glendale,	Glendale Coal Company,	do.	Drift,	101	48	149	. . .	164	17	40,260	39,549	. .	. .	. .	. .	. .
Greenwood,	Penna. Anthracite Coal Company,	do.	Shaft, Slope,	351	137	488	. . .	165	54	121,685.02	120,197.02	2	. .	. .	. .	. .
Green Ridge,	O. S. Johnson,	do.	Slope,	293	100	393	. . .	203¾	39	135,749	130,045	1	. .	. .	. .	. .
Grassy Island,	Grassy Island Coal Co., limited,	do.	Shaft,	243	101	344	. . .	177½	29	109,096	106,132.05	. .	. .	. .	. .	. .
Grassy Island,	Delaware and Hudson Canal Co.,	do.	do.	237	116	353	. . .	210½	40	134,832.17	124,435.05	. .	. .	. .	. .	. .

TABLE II. VENTILATION OF COLLIERIES—*Continued.*

COLLIERIES.	Operators.	Character of coal, (Anthracite or Semi-Anthracite, Bituminous or Semi-Bituminous.)	Drift, slope, or shaft.	Number of inside workmen.	Number of outside workmen.	Total employees.	Number of days worked inside.	Number of days worked outside.	Number of horses and mules.	PRODUCTION.		CASUALTIES.				
										Number of tons produced.	Number of tons shipped.	Killed inside.	Killed outside.	Injured inside.	Injured outside.	Total killed and injured.
Holden,	Del., Lacka. and West. R. R. Co.,	Anthracite.	Shaft,	140	70	210	...	76.1	22	30,759.02	29,280.02	..	..	..	..	...
Hyde Park,	do. do. do.	do.	do.	272	108	380	...	181.8	49	182,260.07	177,156.07	1	..	..	..	...
Jermyn No. 1,	Delaware and Hudson Canal Co.,	do.	do.	239	91	330	...	202¼	32	140,367.06	122,938.03	1	..	..	..	...
Jermyn No. 2,	do. do. do.	do.	Slope,	56	13	69	...	164¾	13	31,561.04	28,899.13	..	..	..	..	...
Jermyn No. 4,	John Jermyn,	do.	Shaft,	275	100	375	...	170½	31	127,907	126,944	2	1	..	..	...
Leggett's Creek,	Delaware and Hudson Canal Co.,	do.	do.	308	107	415	...	182½	53	158,415.19	147,460.19	2	..	..	..	...
Lackawanna Coal Company,	Lackawanna Coal Company,	do.	do.	239	100	339	...	166	34	123,645	122,250	3	1	..	..	...
*Meadow Brook,	William Connell & Co.,	do.	Tunnel,	75	...	75	...	....	16	.....	.....	..	..	..	..	...
Meadow Brook Shaft,	do. do.	do.	Shaft,	220	102	322	...	193	41	131,308	112,117	..	..	..	..	...
Mount Pleasant,	William T. Smith,	do.	Slope,	187	127	314	...	184.2	35	123,636.16	114,636.16	1	..	..	..	...
Manville,	Del., Lacka. and West. R. R. Co and Del. and Hud. Canal Co.,	do.	Shaft,	297	106	403	...	190¾	47	192,176.03	180,553.03	..	..	..	..	...
Marvine,	Delaware and Hudson Canal Co.,	do.	do.	316	101	417	...	206½	56	185,430.19	172,910.19	1	..	..	..	...
No. 1 Shaft, Carbondale,	do. do. do.	do.	Shaft, Tunnel,	265	30	295	...	204¾	28	34,462.02	33,322.02	1	..	..	..	...
No. 3 Shaft, Carbondale,	do. do. do.	do.	Shaft,	125	21	146	...	30¼	10	6,653	2,584	2	..	..	..	...
National,	William Connell & Co.,	do.	Shaft, Slope,	189	104	293	...	172.1	30	106,522	106,522	..	..	..	..	...
Old Forge,	Pennsylvania Coal Company,	do.	Shaft,	196	112	308	...	225½	26	130,465	130,465	2	..	..	..	...
Oxford,	Del., Lacka. and West. R. R. Co.,	do.	do.	177	94	271	...	32.4	52	19,510.05	15,134.05	..	..	..	..	...
Olyphant No. 2,	Delaware and Hudson Canal Co.,	do.	do.	195	105	300	...	1¾	35	8,090.10	507.02	..	..	..	..	...
Pyne,	Del., Lacka. and West. R. R. Co.,	do.	Shaft, Slope,	260	104	364	...	182.4	59	172,099.18	166,366.18	..	..	..	..	...
†Pine Brook,	Lackawanna Iron and Coal Co.,	do.	Shaft,	7	8	15	...	....	...	.....	.....	..	..	..	..	...
Pancoast,	Pancoast Coal Company, limited,	do.	do.	299	106	405	...	208½	41	142,118	129,288	..	..	..	..	...
Pierce,	Pierce Coal Company, limited,	do.	Slope, Tunnel,	198	94	292	...	145	23	92,007	90,357	..	..	..	..	...
Powderly,	Delaware and Hudson Canal Co.,	do.	Slope,	187	26	213	...	170½	21	54,842.16	50,147.66	1	..	..	..	...
Richmonds,	Elk Hill Coal and Iron Company,	do.	Shaft,	75	50	125	...	156	14	34,916	34,316	..	..	..	..	...
Racket Brook,	Delaware and Hudson Canal Co.,	do.	Breaker,	....	77	77	...	240½	4	190,601.05	188,410.15	..	..	..	..	...
Spring Brook,	William E. Colbourne,	do.	Drift,	84	34	118	...	141	13	33,076.10	32,522.01	..	..	..	..	...
Sibley,	Elliott, McClure & Co.,	do.	Shaft, Slope,	142	78	220	...	192.8	23	79,646	69,944	..	..	..	..	...
Sloan,	Del., Lacka. and West. R. R. Co.,	do.	Shaft, Slope,	270	134	404	...	182.9	59	180,005.03	172,770.03	1	..	..	..	...

‡Storrs,	do.	do.	do.	do.	Shaft,	....	8	8	...	....	...	.....	.....	...	...	...
Shaft No. 13,	Pennsylvania Coal Company,			do.	do.	152	21	173	...	235	35	93,869	93,869	1	...	...
Shaft No. 2, Dunmore,	do.	do.		do.	do.	134	11	115	...	185	11	45,490	26,763	...	...	...
Shafts No. 3 and 4, Dunmore,	do.	do.		do.	do.	240	64	304	...	197½	39	124,158	115,544	1	...	...
Shaft No. 5, Dunmore,	do.	do.		do.	do.	151	76	227	...	164	18	79,471	71,174	1	...	...
Screens, Dunmore,	do.	do.		do.	Breaker,	....	64	64	...	186¾	2	90,626½	90,189	..	1	...
Spencers, Dunmore,	A. D. & L. M. Spencer,			do.	Shaft,	160	107	267	...	155	24	95,096	87,896	1	...	...
Taylors,	Del., Lacka. and West. R. R. Co.,			do.	Shaft, Drift,	290	148	438	...	184½	78	150,602.06	143,510.06	2	...	...
Von Storch,	Delaware and Hudson Canal Co.,			do.	Shaft, Slope,	451	141	592	...	207½	76	241,537.19	230,525.03	3	...	...
White Oak,	do.	do.	do.	do.	Slope, Drift,	176	114	290	...	211½	33	103,321.03	97,913.11	1	...	...
Keystone,	Hillside Coal and Iron Company,			do.	Drift,	146	44	190	...	186¾	23	61,183.19	61,183.19	...	...	...
Totals,						13,627	6,023	19,650	...	....	2,422	7,225,319.10	6,747,157.11	50	4	171	23	248
Local coal sale mines,						149	70	219	...	....	36	33,534	.....	...	...	...	...	...
Grand totals,						13,776	6,093	19,879	...	....	2,458	7,258,853.10	6,747,157.11	50	4	171	23	248

*Coal prepared at National breaker. †No coal mined in 1885. ‡No coal shipped in 1885.

TABLE III.—*Showing methods of ventilation, size of fans and furnaces, size of inlets and outlets, number of headings, number of openings, and the air measurements taken at the collieries in the First Anthracite Mine District, for the year 1885.*

COLLIERIES.	Ventilation—Natural, Furnace, or Fan.	Number of openings.	Diameter of fan in feet.	Size of furnace in feet.	Size of inlet in square feet.	Size of outlet in square feet.	Number of headings.	NOVEMBER. Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Archbald Mine,	Fan,	2	12		133	72	6		20,658	546	17,254		18,252
Split A,									71,456	174	16,729		
Split C,										166	12,636		
Split E,										213	8,960		
Split F,										246	12,250		
Split H,										307	8,271	1,037	74,690
Total,								693	92,114		76,100	1,291	92,942
Bellevue Shaft, J,	Fan,	2	14		75.6	84.4	6	1,140	86,177	242	18,154		
Split A,										141	10,098		
Split B V,										317	9,515		
Split H,										168	10,080		
Split D,										215	6,457		
Split B,										371	13,365	1,156	97,608
Total,									86,177		67,669		97,608
Bellevue Slope, G E,	Fan,	2	14		80	69	2	735	58,800	388	27,200		
Split G H F,										401	22,620	885	61,050
Total,									58,800		49,820		61,050
Brisbin Mine, B. Williams,	Fan,	2	14		90	120	5	488	43,953	275	16,500	590	70,800
B. Williams split,					70	80		240	16,810	222	15,600	228	18,200
Thomas Carwardin's split,					85			255	21,690	254	15,246		
John X. Davis split,										270	16,200		
A. L. Starkey split,					140	90				144	10,100		
Total,								588	82,453		73,646	989	89,000

Bridge Mines, No. 1, split,	Fan,	2	14		67	72		388	86,040	389	25,716	441	31,752
No. 2, split,					56	70		268	5,020	230	14,749	265	18,522
Total,					80	98		513	41,060		40,465	513	50,274
Brennan's Mines, (no coal mined in 1885,)													
Continental, Hogan's split,	Fan,	2	12		210	91	6	501	105,275	223	18,175		
William E. Reese split,										202	16,395		
Morgan Morgan's split,										241	17,250		
William Hughes' split,										260	19,525		
Charles Combe split,										265	17,375		
Patrick Cannon's split,										265	14,200	1,186	107,950
Total,								501	105,275		102,920	1,186	107,950
Central Mines, West Side split,	Two fans,	2	17½		51½	51.4		336	17,400	282	14,500		
P. Hart's split,					128.3			694	89,088	233	12,027		
F. Mangan split,										54	3,348		
William Beddoe split,										177	11,484		
M. Edwards' split,					35	73.3		362	12,670	205	12,345	1,368	100,280
Locomotive split,										288	15,183		
Tunlin's split,										293	17,756		
Laughan's split,					64.6	83		260	16,798	174	16,006	646	53,655
Rock vein, East split,					60			421	25,263	250	20,000		
Rock vein, West split,						60.2				70	3,210	517	31,140
Total,									161,219		125,859		185,075
Cayuga Mines, Diamond split,	Fan,	2	12		128	72		261	33,468	5	23,180	470	33,846
George Burch split,					77	70		562	43,280	4	25,376	647	45,286
John Wanton split,										3	14,170		
Total,									76,748		62,726		79,132
Capouse Shaft, G split,	Fan,	3	20		70	84		260	18,200	205	18,000	225	18,900
I split,					126	72		143	18,000	166	17,400	254	18,270
K split,					70	70		271	19,000	260	18,200	271	19,000
L split,					70	192		223	15,600	181	15,240	83	16,000
E G split,	Fan,		9		210	54		107	22,400	260	20,200	444	24,000
F G split,					70	84		314	22,000	206	19,800	274	23,000
I G split,					72	189		333	24,000	262	22,000	132	25,000
Total,					280	170		498	139,200		130,840	848	144,170
Coal Brook Mine, South, No. 1,	Fan,	4	17		36			339	12,200	375	15,000		
West, No. 2,					90			171	15,400	455	18,200		
North, No. 3,					50			300	15,000	488	24,400		
East, No. 1,					63			714	45,000	250	12,000		
East, No. 2,					82			761	55,000	250	10,000		
Total,					126	84						1,200	100,800

TABLE III.—VENTILATION OF COLLIERIES—*Continued.*

COLLIERIES.	Ventilation—Natural, Furnace, or Fan.	Number of openings.	Diameter of fan in feet.	Size of furnace in feet.	Size of inlet in square feet.	Size of outlet in square feet.	Number of headings.	NOVEMBER. Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Dunn Mines, North-East split,	Fan,	2	15	.....	98	100	...	....	24,570	395	18,960	....	26,580
South split,		...	...	.....	.....	.....	...	....	26,400	449	21,540	....	26,500
Total,		...	...	.....	.....	.....	...	520	50,970	....	40,500	531	53,080
Dodge Mines, B split,		..	...	96	67½	132.70	...	466	31,450	221	13,260	....	.....
C split,		...	...	.....	.....	.....	...	.....	.....	250	18,000	....	.....
E split,		...	...	.....	63	.....	...	868	54,676	249	17,112	....	.....
F split,	Double furnace,	2	...	.....	.....	.....	...	....	.....	200	18,018	....	.....
H split,	Fan,		...	.....	105	..	...	384	40,305	208	18,018	....	.....
R Y and A split,			...	.....	.....	.....	...	....	.....	181	17,724	....	.....
S split,			...	.....	.....	.....	...	....	.....	415	14,940	....	132,702
Total,		...	...	.....	210	.....	...	602	126,431	....	117,072	1,000	132,702
Diamond, No. 2, J. Meredith split,	Two fans,	2	14	.....	108	110		615	66,416	972	23,335	....	.....
David Richards' split,		...	...	.....	.....	.....	...	....	.....	452	15,836	....	.....
Stephen Evans' split,		...	...	.....	.....	.....	...	....	.....	271	14,623	....	.....
Morgan Morgan's split,		...	...	.....	.....	.....	...	....	.....	951	11,415	617	67,820
Total,		...	...	.....	.....	.....	...	....	66,416	....	65,209	617	67,820
Diamond Tripp Shaft, North split,	Two fans,	2	...	.....	193	.....	...	430	82,960	429	40,850	....	.....
South split,		...	...	.....	.....	224	...	....	.....	482	41,314	373	83,740
Total,		...	...	.....	.....	.....	...	....	82,960	....	82,164	....	83,740
Dickson Shaft, West split,	Fan,	2	12	.....	90	80	...	209	18,850	....	.....	....	.....
East split,		...	...	.....	48	.....	...	472	22,680	....	.....	....	.....

North Heading Slope split,										77	3,240		
Wells' Heading Slope split,										188	16,900		
Line Heading Slope split,										257	14,380		
Total,								41,530			34,520	805	64,380
Eddy Creek, No. 1, Slope split,	Fan,	2	20		35	100		176	6,160	187	5,050		
Second split,					20			405	8,110	182	7,270		
Third split,					42			346	14,540	208	10,010		
West Fourth split,					27			330	8,910	330	8,910		
North Fifth split,					41			237	9,720	127	5,060		
North Sixth slip,					45			240	10,800	331	8,613		
East Seventh split,					64			275	17,600	314	12,450	1,830	183,018
Total,					240			316	75,840		57,363	1,830	183,018
Eaton Mines,	Fan,	2	14		84	64		582	48,850	517	24,800	765	48,960
Edgerton Mine, L. H. Gangway,	Furnace,	2		48	140			168	23,540	162	16,220		
South,					77	202				177	13,600	117	23,800
Total,									23,540				23,800
Erie Shaft Plane Heading,	Fan,	2	17½		120	100		377	45,210	192	16,100	761	67,120
Greer's,										219	13,180		
Sullivan's,										174	8,510		
Smalicomer's,										247	13,860		
Total,									45,210		51,650		67,120
Fair Lawn, Rafferty's Heading,	Fan,	2	14		72	87		633	45,600	630	22,625		
Visgor's,										533	22,400	513	44,600
Total,									45,600		45,025		44,600
Filer's Slope, N. E. Gangway,	Fan,	2	14		87			459	39,960	422	17,640		
West,						72				339	20,360	565	40,870
Total,									39,960		38,000		40,870
Forest City, North split,	Fan,	2	16		96			550	52,850	183	9,876		
South,						100				338	20,374	620	62,000
Total,									52,850		30,250		62,000
Glendale, No. 3 Heading,	Furnace,	5		30	48	64		196	8,240	175	6,300		
No. 2,					42			224	9,380	188	8,100	292	18,720
Total,													

TABLE III.—VENTILATION OF COLLIERIES—*Continued.*

COLLIERIES.	Ventilation—Natural, Furnace, or Fan.	Number of openings.	Diameter of fan in feet.	Size of furnace in feet.	Size of Inlet in square feet.	Size of outlet in square feet.	Number of headings.	NOVEMBER.					
								Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Greenwood Shaft, No. 1 split,	Fan,	2	14	.....	60	108	...	291	17,500	269	10,750	178	19,200
Shaft, No. 2 split,		...	...	.....	60	108	...	183	11,400	205	8,200	124	13,400
Shaft, No. 3 split,		...	...	.....	40	48	...	185	7,400	180	7,200	160	7,600
Tunnel split,	Furnace,	2	...	80	90	70	...	289	26,000	326	13,750	347	24,300
Slope,	Furnace,	2	...	80	70	60	...	271	19,000	191	11,500	353	21,200
No. 12, drift, split,	Furnace,	2	...	72	65	70	...	206	13,400	236	8,500	203	14,200
Total,		...	...	.....	.....	.....	...	....	....	....	.....	....	.....
Green Ridge, South H, No. 1,	Fan,	2	12	.....	72	55	...	128	9,210	127	8,399	175	9,610
North H, No. 2,		...	...	.....	66	98	...	132	10,700	137	9,820	109	10,740
South H, No. 3,		...	...	.....	75	60	...	216	16,226	231	13,844	272	16,320
Total,		...	...	.....	.....	.....	...	....	36,136	....	32,063	....	36,670
Grassy Island, South split,	Fan,	2	12	.....	126	96	...	610	67,910	256	15,380	....	.....
North split,		...	...	.....	.....	.....	...	....	.....	281	16,890	700	68,140
Total,		..	...	.....	.....	.....	...	....	.....	....	.....	....	.....
Grassy Island, North, No. 1,	Fan,	2	20	.....	54	.....	...	307	16,575	387	15,000	....	.....
North, No. 2,		...	...	.....	60	.....	...	336	20,200	537	21,490	....	.....
Slope,		...	...	.....	40	.....	...	252	10,100	234	9,845	....	.....
Slope, No. 1,		...	...	.....	70	.....	...	350	24,535	388	19,025	....	.....
Slope, No. 2,		...	...	.....	39	.....	...	305	11,900	252	10,100	....	.....
South,		...	...	.....	65	84	...	315	20,500	314	19,460	1,249	106,890
Total,		...	...	.....	140	.....	...	....	103,810	....	94,920	....	106,890

Holden Shaft, gangway A, Top vein,	Fan,	2	25		66			490	32,340	365	28,105		
Gangway B, Top vein,					96	77		205	19,680	165	17,160	705	54,285
Gangway A, Bottom vein,					147			150	22,050	155	18,445		
Gangway B, Bottom vein,					147	110		155	22,785	195	19,110	395	43,450
Total,									96,855		82,820		97,735
Hyde Park, Jones' gangway,	Double furnace,			96	78			678	52,925	421	16,845		
Edwards' gangway,										515	16,480		
Mosier gangway,										108	2,910		
Thomas' gangway, Rock vein,					96			345	23,180	195	12,315		
Lunney's gangway, Rock vein,					140	120				209	3,130	693	83,190
Total,									76,105		51,680		83,190
Jermyn, No. 1, East split,	Fan,	2	17		48			310	14,875	228	13,650		
Slope, No. 1, split,					72			307	22,120	214	15,400		
Slope, No. 2, split,					72			233	16,760	145	10,425		
South split,					70	120		736	51,515	329	23,625		108,240
Total,									105,270		63,100	902	108,240
Jermyn, No. 2, Slope,	Natural,	4			60	100		808	48,500	546	32,800	505	50,460
Jermyn, No. 4, Shaft,	Fan,	2	20										
Thomas Alsop's gangway,					100	100		1,017	104,725	201	14,300	1,058	105,795
John Nicholson's gangway,										201	14,100		
William Kelly's gangway,										207	12,810		
John Hawk's gangway,										167	11,860		
William Clark's gangway,										130	9,140		
Total,									104,725		62,210		105,795
Leggitt's Creek Shaft, Diamond vein,	Fan,	2	20										
North head of split,					39			316	12,320	204	12,245		12,410
East head of split,					39			316	12,340	204	12,260		12,400
Shaft, 14 ft. vein,													
East heading, South side,					81			150	12,150	144	11,640		12,200
East heading, No. 2, South side,					78			146	11,350	144	11,200		11,400
South heading, South side,					35			343	12,000	264	11,850		12,350
River heading, South Side,					36			150	5,450	84	5,440		5,450
East heading, North side,					39			316	12,320	152	12,150		12,350
West heading, North side,					37			335	12,400	163	12,200		12,450
North heading, North side,					38			350	13,300	171	13,000		13,400
Total,						90			103,630		101,985	1,160	104,410
Lackawanna Coal Company, North heading,	Fan,	2	20		140	100		110	15,432	164	13,800	154	15,432
South heading,					72	72		237	17,040	240	14,430	238	17,140
West heading,					70	100		230	16,140	177	13,650	163	16,270
Total,									48,612		41,880	488	48,842

TABLE III.—VENTILATION OF COLLIERIES—*Continued.*

COLLIERIES.	Ventilation—Natural, Furnace, or Fan.	Number of openings.	Diameter of fan in feet.	Size of furnace in feet.	Size of inlet in square feet.	Size of outlet in square feet.	Number of headings.	NOVEMBER. Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Meadow Brook Tunnel,									44,070				44,770
Counter gangway,	Furnace,	2		64	48	36		453	21,760	275	19,840	610	21,980
Lower gangway,	Furnace,			36	72	36		313	22,310	289	20,780	633	22,790
Total,									44,070		40,620		44,770
Meadow Brook Shaft,	Fan,	2	14										
Two lower gangways, east,										184	14,730		
Main gangway and counter, east,					63			543	34,170	205	16,410	950	66,540
Counters at head of plane,										291	20,780		
West gangway from shaft,					168	70		290	32,110	113	9,130		
Total,									66,280		61,050		66,540
Mount Pleasant Mines,	Fan,		14										
Slope and drift,		2			112	81		236	26,450			353	28,560
Rock vein tunnel,										206	12,380		
Straight heading,										180	11,420		
First foot,										121	4,360		
Total,									26,450		28,160		28,560
Manville Mines, straight heading,	Fan,	2	20		140	90		666	93,290	212	17,820	1,257	113,100
Matt. Riley's heading,	Fan,		15	Not wo	rking.					160	8,960		
Collins heading,										112	10,500		
Firey Hill heading,										70	4,480		
Powell's heading,										185	13,300		

														17,400
Matthews heading,										239	15,750			
Burns heading,										212	14,400			
Total,									93,290		85,210			113,100
Marvine Mines, Diamond,	Fan,	2	20		61			351	21,420	280	18,450			24,000
East split, 14 ft. vein,					60			400	24,000	264	19,800			25,000
West split, 14 ft. vein,					60			393	23,600	174	13,910			24,280
Plane split, 14 ft. vein,					66			362	23,900	259	20,200			26,100
Slope No. 1, 14 ft. vein,					42			550	23,100	275	19,850			22,500
Slope No. 2, 14 ft. vein,					58			360	20,880	247	17,280			21,600
Total,					210	105		652	136,900		109,490	1,366		143,480
National Shaft and Slope,	Fan,	2	14											
Slope, gangway east,										264	11,870			
Slope, gangway west,					117			306	35,760	287	14,380			
No. 3 vein,						88				116	8,360	761		66,930
Shaft, gangway east,										231	13,890			
Shaft, gangway east,					198			152	30,160	199	14,350			
Total,									65,920		62,850			66,930
No. 1 Shaft, Carbondale, Slope No. 1,	Fan,	2	17		46			533	24,500	371	14,860			
Slope, No. 2.					36	46		486	17,480	361	13,200	1,413		65,000
Total,									41,980		28,060			65,000
No. 3 Shaft, Carbondale, Split, No. 1,	Fan,	2	17		48			350	16,790	207	8,280			
Split, No. 2,					72			443	31,920	275	19,880			
Split, No. 3,					40	84		299	11,960			741		62,240
Total,					73			831	60,670		28,160			62,240
Old Forge Shaft, East heading,	Fan,	2	17½		72			223	16,075	173	10,390			16,980
West heading,					108			141	15,220	163	10,100			16,040
Waters' heading,					70			251	17,600	169	10,170			18,300
Cranston's heading,					60			91	5,450	117	4,700			6,010
Total,					156	120		348	54,345		35,360	479		57,330
Oxford Shaft, A F split,	Fan,	2	14							490	29,400			
B split,										412	29,610			
C split,										467	28,000			
D split,					112	81		1,070	119,840	431	31,920	1,430		120,120
Total,									119,840		118,960			120,120
Pyne Shaft, David Powell's heading,	Fan,	2	12						15,300	357	19,260			
David Harris' heading,									34,250	391	15,750			
William Reddle heading,					36					114	7,430			
William Roberts' heading,					90			501	45,120	253	19,730			

TABLE III.—VENTILATION OF COLLIERIES—*Continued.*

COLLIERIES.	Ventilation—Natural, Furnace, or Fan.	Number of openings.	Diameter of fan in feet.	Size of furnace in feet.	Size of intlet in square feet.	Size of outlet in square feet.	Number of headings.	NOVEMBER. Velocity of air current per minute at inlet.	Number of cubic feet passing in at inlet per minute.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Pine Shaft, David Powell's heading—*Continued:*													
William Lauder heading,	Fan,				54	105				404	22,600	913	95,680
William Davids' heading,					80	87		168	13,470	419	12,560	169	14,730
Thomas Griffiths heading,					90	10½		87	7,860	130	7,200	966	10,140
Total,					140	100		829	116,000		104,530	1,205	120,550
Pancoast Mines, Diamond West,	Fan,	2	15						25,060	561	19,071		55,077
East,									24,871	521	18,748		
Clark Vein,									26,372	545	19,084		58,415
Slope,									27,010	331	19,876		
Total,					170	124		608	103,313		76,779	915	113,492
Pine Brook split A,	Double fan,	2	17½		154			349	29,980	313	28,460	226	33,880
Split B,						91		893	89,260	542	48,840	854	93,890
Split C,								308	34,520	303	33,960	324	35,640
Split D,								Clark's	vein, old	work	ings.	568	51,120
Total,						133			153,760		111,260	1,228	163,410
Pierce,	Fan,	2	12		50	64		1,300	65,000	870	140,000	1,250	80,000
Powderly Tunnel split,	Fan,	2	17		55			409	22,475	381	22,097		22,386
Slope split,					57			422	24,050	493	23,184		23,894
East split,					52			286	14,875	238	14,296		14,374
West split,					60			398	23,875	383	22,978		23,496
North-East split,					40			303	12,135	301	12,049		12,112
Total,					70	80		1,391	97,410		94,604	1,203	96,262

Richmond Slope split,	Fan,	2	9		48	60		344	16,500	298	12,500	290	17,400
Spring Brook,	Steam jet,	2			48	60		262	12,600	61	3,400	237	13,600
Sibley,	Fan,	2	15		90	70		367	33,000	410	17,200	497	34,800
Sloan split A,	Fan,	2	12		90	72		820	73,835	456	18,250	831	59,817
Split B,										256	17,008		
Split C,										198	9,914		
Split E,										206	16,528		
Split K,										163	10,784		
Split X Z,					90	70		278	25,012	260	13,012	581	40,710
Total,					120	100		825	98,847		85,496	1,005	100,527
Stark Slope split,	Fan,				65	60		133	8,730	188	7,945	146	8,745
Shaft No. 13, Main Road intake,	Fan,	2	17½		91			848	44,100				
West Level,					70			205	14,328	172	10,320		
West Slope heading,										305	19,800		
East Slope,										268	16,100		
Outlet at fan,						108						515	55,614
Total,									58,428		46,220		55,614
Shaft No. 2, Dunmore, top vein,	Furnace,	2		27	84	62		232	19,500	237	14,250	326	20,240
Bottom,	Natural,	2			50	50		184	9,180	142	7,120	184	9,220
Total,									28,680		21,370		29,460
Shafts Nos. 3 and 4, Dunmore, intake,	Fan,								52,600				
No. 3, top vein,					72	60		143	10,300	163	9,800	179	10,780
No. 3, bottom,					60	60		205	12,300	170	11,900	210	12,600
No. 4, top,					60	70		343	20,600	231	20,300	298	20,880
No. 4, bottom,					60	70		156	9,400	112	9,180	137	9,580
Total,									52,600		51,080		53,840
Shaft No. 5, Dunmore,	Fan,	2	17½										
First vein, South-West side,					60	40		175	10,500	150	7,500	542	22,500
North-East,					60			192	11,500	140	7,000		
Second, South-West side,					60	50		133	8,000	117	7,000	340	17,000
North-East,					60			141	8,500	125	7,500		
Third, South-West side,					60	60		133	8,000	140	7,000	316	19,000
North-East,					60			175	10,500	133	8,000		
Fourth Vein,					60	55		200	12,000	210	10,500	245	13,500
Total,					156	120		442	69,000		51,500	600	72,000

TABLE III.—VENTILATION OF COLLIERIES—*Continued.*

COLLIERIES.	Ventilation—Natural, Furnace, or Fan.	Number of openings.	Diameter of fan in feet.	Size of furnace in feet.	Size of inlet in square feet.	Size of outlet in square feet.	Number of headings.	NOVEMBER. Velocity of air current per minute at inlet.	Number of cubic feet passing in per minute at inlet.	Velocity of air current at or near face of heading.	Number of cubic feet per minute passing at or near face of heading.	Velocity of air current per minute at outlet.	Number of cubic feet per minute passing out.
Spencer's main heading,	Fan,	2	14	.....	60	72	...	483	28,980	637	28,700	419	30,000
Slope,				.....	36	40	...	113	4,060	109	3,920	103	4,140
Total,				.....	152	80	...	217	33,040	....	32,240	427	34,140
Taylor, J split,	Two fans,	2	14	.....	96	.....	...	248	23,760	232	22,275	....	.....
R split,				.....	45	.....	...	620	27,900	242	23,265	....	.....
B split,				.....	96	.....	...	265	25,440	256	24,600	....	.....
G split,				.....	88	.....	...	160	14,000	147	13,000	....	.....
S split,				.....	96	.....	...	206	19,800	226	18,855	....	.....
H split,				.....	80	96	...	284	22,770	280	21,285	1,615	155,020
Total,				.....	.....	.....	...	....	133,670	....	123,280	....	155,020
Taylor Drift, M split,	Fan,	2	12	.....	54	72	...	463	25,000	282	24,000	....	.....
.....				.....	35	.....	...	400	14,000	377	13,200	600	43,200
Total,				.....	.....	.....	...	....	39,000	....	37,200	....	43,200
Von Storch, 14 ft. vein,	Two fans,	2	20	.....	.....	.....	...	....	.....	....	.....	....	.....
Foot intake,			17½	.....	72	70	...	203	14,640	172	11,200	268	18,800
North intake,				.....	60	64	...	292	17,500	128	9,000	300	19,200
Diamond vein, plane side,				.....	60	72	...	277	16,600	137	8,200	347	25,000
Diamond vein, rock side,				.....	49	49	...	190	9,300	130	7,500	171	8,400
Clark vein, North side,				.....	60	70	...	723	43,400	231	17,300	658	46,100
Clark vein, North split,				.....	.....	.....	...	....	.....	286	18,600	....	.....
Clark vein, South side,				.....	80	80	...	510	40,800	366	26,400	591	47,300
Clark vein, new split,				.....	6	.....	...	....	.....	333	20,000	....	.....
Total,				.....	140	109	...	1,016	142,240	....	118,200	1,512	164,800

White Oak, first lift,	Fan,	2	17		50			1,190	59,400	444	21,320		
Second lift,						56				695	37,500		6
Total,					50	100		1,190	59,400		58,820	615	61,500
White Oak Tunnel, South split,	Furnace,			64	60	55		330	19,820	204	12,260		
East split,					48			116	5,580	115	4,820		30,180
Total,					60	81		423	25,400		17,080	249	30,180
Keystone, foot of plane,	Furnace,			60	60	60		362	21,617	422	20,272	368	22,103
Manway,					50	64		409	20,405	400	19,225	316	20,210
Total,									42,022		39,497		42,313

Note.—There are in the First District 63 fans, 11 furnaces, 1 steam jet, and one by natural means.

TABLE No. IV.—*List of serious and non-fatal accidents reported to the Inspector now including all of Lackawanna and a portion of Wayne and Susquehanna year ending 31st day of*

No.	Date.	Names.	Age.	Colliery where Accident Occurred.	Nationality.
1	Jan. 7	Frank Conway, . .	52	Grassy Island Mines, D. & H., Olyphant borough,	Irish, ...
2	12	John Harn, ...	30	Green Ridge Slope, O. S. J., Dunmore borough, .	Irish, ...
3	13	John Maloney, . . .	16	Green Ridge Slope, O. S. J., Dunmore borough, .	American, .
4	16	James Thomas, . .	18	National Breaker, W. C. & Co., Twentieth ward, Scranton.	Welsh, . . .
5	Feb. 4	Edward Day, ...	13	Brisbin Mines, D. L. & W., Third ward, Scranton,	Irish, ...
6	7	William R. Jones, .	45	Continental Mines, D. L. & W., Lackawanna twp.,	Welsh, . . .
7	11	Thomas Culkin, . .	27	Cayuga Mines, D. L. & W., Third ward, Scranton,	Irish, ...
8	Mar. 2	Lucas Ex, ...	35	Meadow Brook Tunnel, W. C. & Co., Twentieth ward, Scranton.	Polish, . . .
9	24	P. C. Moran, ...	. .	No. 1 Shaft Mines, D. & H. C. Co., Carbondale city.	Irish, ...
10	25	Edward Saunders, .	16	Marvine Mines, D. & H. C. Co., First wd., Scranton,	English, . .
11	27	Michael Collins, . .	65	Diamond, No. 2, D. L. & W., Twenty-first ward, Scranton.	Irish, ...
12	28	Michael O'Hora, . .	48	Glendale Mines, G. C. Co., Lackawanna twp., . .	Irish, ...
13	28	Thomas Stevens, .	19	Greenwood Mines, P. A. C. Co., Lackawanna twp.,	American, .
14	28	William Lewis, . .	63	Eddy Creek Mines, D. & H., Olyphant borough, .	Welsh, . . .
15	Apr. 4	James Alexander, .	24	Spring Brook Mines, W. E. C., Lackawanna twp.,	Scotch, . . .
16	4	Frank Caswell, . .	42	Taylor Mines, D. L. & W., Lackawanna township,	English, . .
17	8	James Burns, . . .	30	Lucas Mines, U. D. Co., Second ward, Scranton, .	Irish, ...
18	15	John Alexander, . .	15	Shaft No. 13, Penna. C. Co., Old Forge township,	Scotch, . . .
19	18	Patrick Leo Davis, .	32	Bridge Mines, B. C. Co., Fourteenth wd., Scranton.	Irish, ...
20	23	Mike Malia, ...	15	Grassy Island Mines, D. & H., Olyphant borough,	American, .
21	24	Patrick Horan, . . .	20	Von Storch Mines, D. & H., Second wd., Scranton,	Irish, ...
22	24	John McNulty, ...		Coal Brook Breaker, D. & H., Carbondale city, . .	American, .
23	May 16	David Phillips, . .	33	Bellevue Mines, D. L. & W., Lackawanna twp., .	Welsh, . . .
24	18	Griffith T. Thomas,	32	Capouse Mines, L. I. & C. Co., Twenty-first ward, Scranton.	Welsh, . . .
25	18	John Kelly, ...	16	Powderly Mines, D. H. & C. Co., Carbondale city,	American, .
26	21	James Burke, . . .	38	Gypsy Grove Mines, Penna. C. Co., Dunmore borough.	Irish, ...
27	25	John Reese, ...	16	Jermyn, No. 4, J. Jermyn, Dickson City borough,	American, .
28	June 17	Peter Gillooley, . .	40	Manville Mines, D. & H. & D. L. & W., Thirteenth ward, Scranton.	Irish, ...
29	July 2	John Muir, ...	. .	Powderly Slope, D. & H. C. Co., Powderly slope,	Scotch, . . .
30	3	Owen Martin, . . .	20	Shaft No. 7, Penn. C. Co., Jenkins township, . . .	Irish, ...
31	10	Michael Honahoe, .	19	Jermyn, No. 4, J. Jermyn, Dickson City borough,	American, .
32	15	Miles King, ...	70	Shaft No. 6, Penna. C. Co., Jenkins township, . .	Irish, ...
33	24	Bryan Quinn, . . .	45	Shaft No. 13, Penna. C. Co., Old Forge township,	Irish, ...
34	25	Edward Laird, . . .	23	Shaft No. 13, Penna. C. Co., Old Forge township,	American, .
35	27	William Prosser, .	19	Eddy Creek Mines, D. & H., Olyphant borough, .	Welsh, . . .
36	28	John Weisenflue, .	23	Taylor Mines, D. L. & W., Lackawanna township,	German, . .
37	Aug. 4	John Duck, ...	16	Jermyn, No. 4, J. Jermyn, Dickson City borough,	English, . .
38	7	Thomas Mulloy, . .	15	Fair Lawn Mines, F. L. C. Co., Seventh ward, Scranton.	American, .
39	11	William B. Davis, .	36	Eddy Creek Mines, D. & H., Olyphant borough, .	Welsh, . . .
40	20	James Ford, ...	30	Pancoast Mines, Penna. C. Co., Dickson City borough.	Irish, ...
41	26	Thomas Gibson, .	16	Hyde Park Mines, D. L. & W., Fifth wd., Scranton,	Irish, ...
42	29	Edward Hughes, . .	30	Law Shaft Mine, Penna. C. Co., Pittston township,	Welsh, . . .
43	Sept. 3	Cornelius Dolan, .	44	National Mines, W. C. & Co., Twentieth ward, Scranton.	Irish, ...
44	9	John P. Ryan, . . .	24	Greenwood Slope, Penn. C. Co., Lackawanna twp.,	American, .
45	25	Patrick Finnegan, .	45	Twin Shaft, Butler C. Co., Pittston borough, . . .	Irish, ...
46	28	David Howell, . . .	62	Pyne Shaft, D. L. & W., Lackawanna township, .	Welsh, . . .
47	Oct. 2	Daniel R. Thomas,	59	Taylor Mines, D. L. & W., Lackawanna township,	Welsh, . . .
48	5	Thomas Loughney,	30	Shaft No. 10, Penna. C. Co., Hughestown bor., .	Irish, ...
49	7	Patrick Sloan, . . .	45	Diamond, No. 2, D. L. & W., Twenty-first ward, Scranton.	Irish, ...
50	12	Patrick O'Hora, . .	60	Shaft No. 5, Penna. C. Co., Dunmore borough, .	Irish, ...
51	16	John Hollen, ...	15	Pyne Mines, D. L. & W., Lackawanna township, .	American, .
52	22	Lewis Powell, . . .	19	Archbald Mines, D. L. & W., Lackawanna twp., .	Welsh, . . .
53	31	Joseph Walsh, . . .	17	Leggett's Creek Mines, D. & H., First ward, Scranton.	American, .
54	Nov. 7	Patrick McCormick,	30	Grassy Island Mine, D. & H., Olyphant borough,	Irish, ...
55	9	Bartley Mullen, . .	52	Jermyn, No. 2 Mine, D. & H., Jermyn borough, .	Irish, ...
56	11	Walter Gibson, . .	14	Mt. Pleasant Mines, W. T. S., Fourteenth ward, Scranton.	American, .
57	12	F. W. Brod, ...	26	Green Ridge Slope, O. S. J., Dunmore borough, .	American, .
58	13	Christ. Koefine, . .	51	Sibley Breaker, E. McC. & Co., Old Forge township.	German, . .

of the East. nistrict of the Wyoming Coal Fields, Luzerne and Carbon counties, counties, State of Pennsylvania, and the cause as shown by his investigations, for the December, A. D. 1885.

Occupation.	Nature of Accident.	No. injured.
Miner, . . .	Two ribs fractured and back hurt; fall of top coal,	1
Laborer, . .	Injured; shot through pillar from next chamber,	2
Driver, . . .	Seriously injured; caught by rope at head of plane in mine,	3
Ollman, . .	Arm fractured; fell off trestle works while snow-balling,	4
Door-boy, .	Arm fractured; run over by mine car,	5
Propman, .	Severely injured; fall of rock,	6
Miner, . . .	Leg fractured and otherwise injured; fall of bony coal,	7
Laborer, . .	Right hand fractured; fall of top coal,	8
Miner, . . .	Leg fractured; hit by coal flying from blast which exploded while John Byrne was tamping hole,	9
Driver, . . .	Leg fractured; hit by mine car,	10
Laborer, . .	Right leg fractured; fall of bony coal,	11
Miner, . . .	Leg fractured; fall of roof,	12
Headman, .	Leg fractured; caught under car at head of slope,	13
Miner, . . .	Left leg fractured; fell on ice going from mines to get some props,	14
Miner, . . .	Ankle mashed; fall of middle rock between coal,	15
Miner, . . .	Arm fractured; fall of top coal,	16
Laborer, . .	Leg fractured, and otherwise injured about the face; fall of roof,	17
Driver, . . .	Right thigh fractured; caught between trip of mine cars and mine track,	18
Laborer, . .	Severely burned on hands and face; explosion of gas,	19
Driver, . . .	Jaw fractured; kicked by a mule,	20
Runner, . .	Arm fractured by explosion of gas,	21
Slate-picker,	Leg fractured; caught between belt and pully in breaker,	22
Miner, . . .	Leg fractured; piece of coal fell out of face of chamber and rolled on it,	23
Miner, . . .	Right leg fractured; caught between prop and piece of coal which rolled on it.	24
Runner, . .	Left leg fractured; fell off a trip of cars, which ran over him,	25
Miner, . . .	Ankle severely crushed; fall of black slate which slipped off coal,	26
Driver, . . .	Collar-bone fractured; caught between car and pillar,	27
Miner, . . .	Seriously injured about head, will lose one eye; premature explosion of blast,	28
Miner, . . .	Left leg and arm broken; fall of rock,	29
Laborer, . .	Leg broken above knee; caught between car and track,	30
Laborer, . .	Right leg fractured and body bruised; fall of bony coal,	31
Culm-man, .	Leg fractured; fell, and a piece of rock slipped off, got on his leg, breaking it,	32
Miner, . . .	Leg fractured below the knee; fall of top coal,	33
Miner, . . .	Leg fractured at ankle; fall of top coal,	34
Laborer, . .	Leg fractured above the knee; fall of bony and top coal,	35
Footman, .	Leg fractured and foot injured; car jumped the track, run against his leg, breaking it,	36
Driver, . . .	Right leg broken; fell in front of a trip of cars,	36
Door-boy, .	Arm fractured; caught by cars,	38
Miner, . . .	Severely injured; explosion of gas,	39
Miner, . . .	Left leg and arm broken; fall of top bench of coal,	40
Door-boy, .	Seriously injured; runaway car knocked door on top of him dislocating his ankle,	41
Miner, . . .	Severely burned; explosion of gas,	42
Miner, . . .	Leg and arm broken; fall of top coal,	43
Carpenter's helper.	Leg broken between knee and ankle by wire-rope on slope,	44
Comp'y man,	Collar-bone and rib broken; trip of cars ran against him on slope,	45
Footman, .	Two ribs broken and shoulder out of joint; car ran against him,	46
Miner, . . .	Leg fractured at knee; fall of top coal,	47
Miner, . . .	Ankle fractured; hit by a piece of coal flying from a premature blast,	48
Laborer, . .	Foot crushed, amputated afterward; fall of roof above the top coal,	49
Dumper, . .	Wrist broken; got hoisted by lever, in falling wrist was broken,	50
Driver, . . .	Leg broken above the ankle; caught between two rails, throwing him in front of car,	51
Footman, .	Foot mangled; caught under hoisting carriage in shaft,	52
Driver, . . .	Right leg crushed; fell in front of car, which ran over him,	53
Miner, . . .	Shoulder-blade fractured; fall of roof,	54
Miner, . . .	Leg and two fingers fractured; fall of roof,	55
Door-boy, .	Leg fractured; fall of roof,	56
Laborer, . .	Leg fractured; fall of roof,	57
Laborer, . .	Right leg fractured; caught in breaker machinery,	58

TABLE IV.—

No.	Date.	Names.	Age.	Collieries where Accident Occurred.	Nationality.
60	Nov. 27	Henry Webb, . . .	16	Spring Brook Mine, W. E. C., Lackawanna township.	American, .
61	Dec. 2	Edward Mullen, . .	16	Central Mine, D. L. & W., Fifteenth ward, Scranton.	Irish, ...
62	5	Thomas Williams, .	15	Oxford Mines, D. L. & W., Fifth ward, Scranton.	Welsh, . . .
63	30	Martin Gannon, . .	49	Von Storch Mines, D. & H., Second ward, Scranton.	Irish, ...

NOTE.—There were 53 serious accidents in the First Mine District in 1885.

NATURE OF ACCIDENTS.

There were 37 persons had their legs fractured.
There were 7 persons had their arms fractured.
There were 9 persons otherwise seriously injured.

Total, . . 53

Continued.

Occupation.	Nature of Accident.	No.
Driver, . . .	Leg broken; fell in front of car, ...	59
Driver, . . .	Left arm broken; got tangled in harness and fell in front of car, ...	60
Driv's helper	Left leg nearly cut off; fell in front of car. Leg amputated afterward, ...	61
Laborer, . .	Breast-bone broken; squeezed between car and pillar in mine, ...	62

TABLE No. V.—*List of slight accidents reported to the Inspector of the Eastern of Lackawanna and a portion of Wayne and Susquehanna counties, State of day of Decem*

Number.	Date.	Name.	Age.	Colliery where Accident Occurred.	Nationality.
1	Jan. 2	Henry Burke, . .	58	Eddy Creek Mines, D. & H. C. Co., Olyphant bor.,	German, . .
2	3	Patrick Langan, .	17	Taylor Mines, D. L. & W. R. R. Co., Lackawanna tp.	Irish, . . .
3	5	Ed. Engleman, .	13	Coal Brook Breaker, D. & H. C. Co., Carbondale city,	American, .
4	6	James Craig, . . .	49	Midland Tunnel, D. & H. C. Co., Fell township, . .	Irish, . . .
5	6	John Smith, . . .	13	Capouse Mines, L. I. & C. Co., Twenty-first ward, Scranton.	English, . .
6	12	David Jaevens, .	43	Lucas Mines, U. C. Co., Second ward, Scranton, . .	English, . .
7	12	John Cole, ...	16	Phœnix Mines, P. C. Co., Marcy township, ...	English, . .
8	12	Bernard Dempsey,	23	Phœnix Mines, P. C. Co., Marcy township, ...	Irish, . . .
9	19	Reese Edwards, .	26	Diamond Mines, D. L. & W., Twenty-first ward, Scranton.	Welsh, . . .
10	23	Chas. Chambers,	29	Brisbin Mines, D. L. & W., Third ward, Scranton, .	American, .
11	26	Alex. McDonald,	14	Brisbin Mines, D. L. & W., Third ward, Scranton, .	Scotch, . . .
12	27	W. McNicholson,	45	Continental Mines, D. L. & W., Lackawanna twp., .	Irish, . . .
13	28	David Harris, . .	35	Von Storch Mines, D. & H., Second ward, Scranton,	Welsh, . . .
14	28	David Powell, . .	23	Von Storch Mines, D. & H., Second ward, Scranton,	Welsh, . . .
15	29	Michael Kearns, .	20	Mosier Mines, B. C. Co., Hughestown borough, . .	Irish, . . .
16	Feb. 4	William Koch, . .	21	Shaft, No. 5, Pennsylvania C. Co., Dunmore bor., .	American, .
17	4	Patrick Thornton,	23	Taylor Mines, D. L. & W., Lackawanna township, .	Irish, . . .
18	6	William Rule, . .	42	Eddy Creek Mines, D. & H., Olyphant borough, . .	English, . .
19	6	Timothy Hogan, .	16	Barnum Mines, Penn'a C. Co., Marcy township, . .	American, .
20	10	Jas. Richardson,	34	Central Mines, D. L. & W., Fifteenth ward, Scranton,	English, . .
21	11	Thos. W. Evans,	14	Taylor Mines, D. L. & W., Lackawanna township, .	Welsh, . . .
22	13	John Gaughan, .	50	Brisbin Mines, D. L. & W., Third ward, Scranton, .	Irish, . . .
23	14	John Haskins, . .	14	Dodge Mines, D. L. & W., Lackawanna township, .	American, .
24	16	John McHugh, .	45	Barnum Mines, Penn'a C. Co., Marcy township, . .	Irish, . . .
25	16	James Higgins, .	13	Barnum Mines, Penn'a C. Co., Marcy township, . .	American, .
26	24	Jas. Flannigan, .	41	Shaft, No. 7, Penn'a C. Co., Jenkins township, . . .	Irish, . . .
27	25	John McAllister,	53	Erie Mines, H. C. & I. Co., Glenwood borough, . .	Irish, . . .
28	26	Jos. Beaumaster,	21	Shaft, No. 2, Penn'a C. Co., Dunmore borough, . .	American, .
29	27	Edward Jordan, .	15	Ontario Mines, L. V. C. Co., Pittston township, . .	American, .
30	Mar. 2	Frank Lloyd, . .	14	Central Mines, D. L. & W., Fifteenth ward, Scranton,	Welsh, . . .
31	7	Thomas Donohoe,	23	Lucas Shaft Mines, U. C. Co., Second ward, Scranton,	Irish, . . .
32	10	James Gahagan, .	23	Von Storch Mines, D. & H., Second ward, Scranton,	Irish, . . .
33	13	Martin Boa, . . .	27	Fair Lawn Mines, F. C. Co., Seventh ward, Scranton,	English, . .
34	18	Peter Higgins, . .	30	National Mines, W. C. & Co., Twentieth ward, Scranton.	Irish, . . .
35	18	John Jennings, .	43	National Mines, W. C. & Co., Twentieth ward, Scranton.	Irish, . . .
36	18	Patrick Walsh, .	35	National Mines, W. C. & Co., Twentieth ward, Scranton.	Irish, . . .
37	23	William James, .	13	Capouse Mines, L. I. & C. Co., Twenty-first ward, Scranton.	American, .
38	25	John Banks, . . .	. .	Marvine Mines, D. & H., First ward, Scranton, . .	English, . .
39	26	James Bamrick, .	60	Phœnix Mines, P. C. Co., Marcy township, ...	Irish, . . .
40	26	John Donohoe, .	26	Phœnix Mines, P. C. Co., Marcy township, ...	Irish, . . .
41	28	William Heath, .	26	Sloan Mines, D. L. & W., Lackawanna township, . .	English, . .
42	30	Anthony McNulty,	16	Barnum Mines, Penn'a C. Co., Marcy township, . .	American, .
43	April 2	James Cawley, . .	16	Manville Mines, D. H. & D. L. & W., Thirteenth ward, Scranton.	Irish, . . .
44	4	Michael Caffrey,	23	Eaton Mines, J. S. & Co., Archbald borough, ...	American, .
45	6	Frank Beech, . .	. .	White Oak Breaker, D. & H., Archbald borough, . .	Polish, . . .
46	6	Thomas Harman,	19	Sibley Mines, Elliot, McClure & Co., Old Forge twp.,	American, .
47	8	Mich. O'Rourke,	38	Halstead Mines, D. L. & W., Marcy township, . . .	Irish, . . .
48	9	John Walsh, . . .	50	Tunnel, No. 1, Penn'a C. Co., Pittston township, .	Irish, . . .
49	10	James Edmonds,	55	Erie Mines, H. C. & I. Co., Glenwood borough, . .	Welsh, . . .
50	10	John Leno, ...	15	Fair Lawn Breaker, F. L. C. Co., Seventh ward, Scranton.	Hungarian,
51	13	James McNulty, .	45	Slope, No. 4, Penn'a C. Co., Jenkins township, . .	Irish, . . .
52	15	Martin Flannery,	36	Fair Lawn Mines, F. L. C. Co., Seventh ward, Scranton.	Irish, . . .
53	15	Fred. Browning,	14	Pancoast Mines, P. C. Co., Dickson City borough, .	English, . .
54	21	George White, . .	32	Greenwood Mines, P. A. C. Co., Lackawanna twp, .	English, . .
55	22	James Walsh, . .	27	Lawn Shaft Mines, Penn'a C. Co., Pittston township,	Irish, . . .
56	22	James Arthur, . .	60	Bellevue Breaker, D. L. & W., Lackawanna twp., .	Irish, . . .
57	23	John Ruddy, . . .	40	Von Storch Mines, D. & H., Second ward, Scranton,	Irish, . . .
58	May 2	Edmund Hoskins,	50	Dodge Mines, D. L. & W., Lackawanna township, .	Welsh, . . .
59	7	Michael McNulty, . .		Marvine Mines, D. & H., First ward, Scranton, . . .	Irish, . . .
60	8	William Bessford, . .		Slope, No. 2, Penn'a C. Co., Jenkins township, . .	English, . .
61	8	Robert Walker, .	23	Slope, No. 2, Penn'a C. Co., Jenkins township, . .	Scotch, . . .

district of the Wyoming coal fields, Luzerne and Carbon counties, now including all Pennsylvania, and the cause as shown by his investigations, for the year ending 31st ber, A. D. 1885.

Occupation.	Nature or Cause of Accident.	Number.
Laborer, . .	Slightly injured; stepped on the carriage after signal was given and fell off, ...	1
Driver, . . .	Slightly injured; squeezed between two cars, ...	2
Slate picker,	Bad flesh wound in right arm; caught between pully and belt in breaker, ...	3
Miner, ...	Cut quite severely about face and one of his eyes injured; premature explosion of blast,	4
Driv's helper	Cut on face and leg bruised; kicked by a mule, ...	5
Miner, ...	Slightly injured while in the act of re-standing a prop; fall of roof came on him, . . .	6
Driver, . . .	Bad flesh wound on arm; caught while coupling cars, ...	7
Laborer, . .	Slightly burned; explosion of gas, ...	8
Miner, ...	Severely cut about face; set fire to his straw; blast exploded immediately, ...	9
Mechanic, . .	Finger mashed by pump, ...	10
Driver, . . .	Slightly injured; kicked by a mule, ...	11
Miner, ...	Severe flesh wound on arm; fall of coal, ...	12
Miner, ...	These men were working together, and while in the act of putting a loaded car on	13
Laborer, . .	track they set a blower on fire which slightly burned them, ...	14
Laborer, . .	Slightly injured on head and hip; fall of black rock, ...	15
Laborer, . .	Slightly injured; fall of roof, ...	16
Laborer, . .	Foot slightly injured; fall of coal, ...	17
Miner, ...	Slightly injured; fall of roof, ...	18
Driver, . . .	Leg slightly injured; caught between two mine cars, ...	19
Laborer, . .	Injured severely; fall of black rock between top and bottom coal, ...	20
Driver, . . .	slightly injured; squeezed between a door in mines and a car, ...	21
Miner, ...	Severely injured; fall of top coal, ...	22
Driver, . . .	Two fingers cut off while in the act of unhitching his mule from a trip of cars, ...	23
Miner, ...	Severely injured by blast; went back to face of chamber when shot went off and caught him, ...	24
Door boy, . .	Slightly injured on foot while in the act of getting off truck, ...	25
Mine carpent.	Injured slightly; caught between the top rails of mine cars, ...	26
Miner, ...	Slightly injured; fell off hoisting carriage, ...	27
Miner, ...	Injured slightly; explosion of loose powder in keg, ...	28
Driver, . . .	Two fingers crushed while in the act of spragging a mine car, ...	29
Door boy, . .	Leg slightly injured; caught under a trip of cars in mine, ...	30
Laborer, . .	Slightly injured; hit by flying coal from blast, ...	31
Laborer, . .	Leg slightly fractured; hit by collar which fell by car striking it, ...	32
Laborer, . .	Leg slightly injured; hit by flying coal from blast, ...	33
Miner, ...	These three men were warned by the fire-boss that there was fire-damp in their work-	34
Laborer, . .	ing place, but they disregarded his instructions not to go there. They went into	35
Laborer, . .	the place and set fire to the gas and got burned; not dangerously, ...	36
Door boy, . .	Slightly injured; caught between empty cars in mine, ...	37
Laborer, . .	Slightly injured; hit his foot with a pick he was breaking coal with, ...	38
Miner, ...	Injured slightly; explosion of gas, ...	39
Laborer, . .		40
Miner, ...	Severely hurt on back and head; fall of roof, ...	41
Driver, . . .	Leg slightly injured; caught between two cars in mine, ...	42
Driver, . . .	Slightly injured; kicked on head by mule, ...	43
Miner, ...	Slightly injured; Peter Gillespie was tamping hole when cartridge exploded, killing himself and injuring Caffrey, ...	44
Laborer, . .	Shoulder dislocated; struck by culm car on culm dump, ...	45
Laborer, . .	Foot slightly injured; caught between bumpers of railroad cars at breaker chutes, . .	46
Miner, ...	Slightly injured about back and sides; fall of top coal, ...	47
Culm man, .	Slightly injured on ankle; hit by light mine cars, ...	48
Miner, ...	Injured slightly about body and leg; fall of top coal, ...	49
Slate picker,	One small toe taken off; caught in cog wheel in breaker, ...	50
Miner, ...	Slightly injured on instep; fall of black rock, ...	51
Miner, ...	Injured slightly; fall of rock roof, ...	52
Driver, . . .	Collar bone fractured and bruised about the hips; mine car run on him, ...	53
Miner, ...	Hip dislocated; fall of under coal, ...	54
Carpenter, .	Slightly burned on hand and face; explosion of gas, ...	55
Laborer, . .	Cut slightly on head; hit by culm car on trestling, ...	56
Laborer, . .	Slightly burned on face and hands; explosion of gas, ...	57
Miner, ...	Injured slightly; fall of coal, ...	58
Miner, ...	Injured on head; fell off ladder in mines, a distance of about ten feet, ...	59
Miner, ...	Very slightly injured on foot; fall of slate; walked home, ...	60
Miner, ...	Very slightly injured on hand and back; fall of black rock, ...	61

TABLE No. V—

Number.	Date.	Name.	Age.	Colliery where Accident Occurred.	Nationality.
62	May 15	Robert Murray, .	37	Erie Mines, H. C. & I. Co., Glenwood borough, . .	Irish, . . .
63	16	William Evans, .	16	Taylor Mines, D. L. & W., Lackawanna township, .	Welsh, . . .
64	19	August Frieze, . .	16	Capouse Mines, L. I. & C. Co., Twenty-first ward, Scranton.	German, . .
65	20	Patrick Kennedy, . .		Spring Brook Mines, W. E. C., Lackawanna twp., .	Irish, . . .
66	23	Gideon Simmons,	24	Ontario Colliery, L. V. C. Co., Pittston township, .	English, . .
67	25	Austin Herraghty,	22	Bellevue Breaker, D. L. & W., Lackawanna twp., .	Irish, . . .
68	June 2	William Horan, .	19	Leggitt's Creek Mines, D. & H., First ward, Scranton,	Irish, . . .
69	3	J. H. Hablett, . .	52	Fairmount Mines, F. C. Co., Pittston township, . .	Welsh, . . .
70	4	David Michael, .	54	Von Storch Mines, D. & H., Second ward, Scranton,	Welsh, . . .
71	8	Philip Andreas, .	25	Mount Pleasant Mines, W. T. S., Fourteenth ward, Scranton.	Hungarian,
72	8	Patrick Duffy, . .	50	Pierce Mines, P. C. Co , Archbald borough, ...	Irish, . . .
73	17	Tally Williams, .	25	Manville Mines, D. & H. & D. L. & W., Thirteenth ward, Scranton.	Welsh, . . .
74	20	Edward Harris, .	60	Barnum Mines, Penn'a C. Co., Marcy township, . .	Welsh, . . .
75	20	Griffith Lewis, . .	13	Brisbin Mines, D. L. & W., Third ward, Scranton, .	Welsh, . . .
76	23	Mark Sullivan, .	46	Pyne Mines, D. L. & W., Lackawanna township, . .	Irish, . . .
77	23	Joseph Evans, . .	14	Leggitt's Creek Mines, D. & H., First ward, Scranton	Welsh, . . .
78	26	Henry Morgan, .	17	Capouse Mines, L. I. & C. Co., Twenty-first ward, Scranton.	Welsh, . . .
79	July 9	Griffith Pierce, .	19	Capouse Mines, L. I. & C. Co., Twenty-first ward, Scranton.	Welsh, . . .
80	16	Anthony McHugh,	68	Central Mine, D. L. & W., Fifth ward, Scranton, .	Irish, . . .
81	20	Michael Bloom, .	27	Lucas Mine, U. C. Co., First ward, Scranton, . . .	Polish, . . .
82	28	Thos. Reddington	30	Shaft, No. 9, Penn'a C. Co., Pittston borough, . . .	Irish, . . .
83	28	Bryan Duffy, . .	45	Dodge Mines, D. L. & W., Lackawanna township, .	Irish, . . .
84	30	Joseph Snyder, .	17	Capouse Mines, L. I. & C. Co., Twenty-first ward, Scranton.	German, . .
85	30	John Brady, . . .	38	Shaft, No. 8, Penn'a C. Co., Hughestown borough,	Irish, . . .
86	31	Patrick Munley, .	32	Filer's Slope, G. & Thomas Winton, ...	Irish, . . .
87	Aug. 1	John McCue, . .	28	Shaft, No. 6, Penn'a C. Co., Jenkins township, . . .	Irish, . . .
88	3	Patrick Quinnan,	50	Meadow Brook Tunnel, W. C. & Co., Twentieth ward, Scranton.	Irish, . . .
89	10	Thomas Quinnan,	15	Shaft, No. 10, Penn'a C. Co., Hughestown borough,	American, .
90	12	Alexander Petrie,	17	Pancoast Mines, P. C. Co., Dickson City borough, .	American, .
91	14	John Davis, . . .	40	Consolidated Mines, H. C. & I. Co., Pleasant Valley borough.	English, . .
92	14	David Aubry, . .	44	Von Storch Mines, D. & H., Second ward, Scranton,	Welsh, . . .
93	14	John K. Jones, .	38	Von Storch Mines, D. & H., Second ward, Scranton,	Welsh, . . .
94	17	Anthony Loftus, .	15	Barnum Mines, Penn'a C. Co., Marcy township, . .	American, .
95	17	John Lilly, ...	45	Continental Mine, D. L. & W., Lackawanna twp., .	Irish, . . .
96	17	John Gallagher, .	30	Continental Mine, D. L. & W., Lackawanna twp., .	Irish, . . .
97	18	Benjamin Harris,	23	Grassy Island Mine, G. I. C. Co., Winton boro., . .	Welsh, . . .
98	19	John Sullivan, . .	12	Pierce Breaker, P. C. Co., Winton borough, ...	American, .
99	19	Thos. McFadden,	35	Fair Lawn Mines, F. L. C. Co., Seventh ward, Scranton.	Irish, . . .
100	20	Joseph Maxwell,	16	Cayuga Mine, D. L. & W., Third ward, Scranton, .	Irish, . . .
101	25	John Williams, .	15	Capouse Mine, L. I. & C. Co., Twenty-first ward, Scranton.	Welsh, . . .
102	25	Frank Healy, . .	25	Eaton Mines, J. S. & Co., Archbald borough, ...	American, .
103	25	Steven Bennett, .	26	Eaton Mines, J. S. & Co., Archbald borough, ...	American, .
104	25	Daniel T. James,	44	Continental Mine, D. L. & W., Lackawanna twp., .	Welsh, . . .
105	27	John E. Termant,	28	No. 2 Slope Mine, Penn'a C. Co., Jenkins township,	American, .
106	28	Thomas Cranston,	16	No. 13 Shaft Mine, Penn'a C. Co., Old Forge twp., .	American, .
107	Sept. 4	Thomas Connors,	18	Spring Brook Breaker, W. E. C., Lackawanna twp.,	Irish, . . .
108	7	Frank Bernice, .	15	Eddy Creek Mines, D. & H., Olyphant borough, . .	Scotch, . . .
109	7	George McNulty, . .		Coal Brook Mines, D. & H., Carbondale city, . . .	Irish, . . .
110	10	James Welsh, . .	35	Barnum, No. 1, Mines, Penn'a C. Co., Marcy twp.,	English, . .
111	10	Frederick Honig,	36	Edgerton Mine, E. C. Co., Jermyn borough, ...	American, .
112	11	Patrick Moran, .	15	Continental Mines, D. L. & W., Lackawanna twp., .	Irish, . . .
113	14	Thos. Armstrong,	23	Shaft, No 6, Penn'a C. Co., Jenkins township, . . .	American, .
114	16	Wm. Griffiths, . .	19	Continental Mines, D. L. & W., Lackawanna twp , .	Welsh, . . .
115	17	John Shaffer, . . .		Marvine Mines, D. & H., First ward, Scranton, . .	German, . .
116	18	Benjamin Jones,	36	Meadow Brook Mines, W. C. & Co., Twentieth ward, Scranton.	Welsh, . . .
117	19	Steven Bowen, .	25	Central Mine, D. L. & W., Fifth ward, Scranton, .	Welsh, . . .
118	19	Patrick Gibbons,	40	Amity Mines, D. L. & W., Lackawanna township, .	Irish, . . .
119	19	John Keefe, . . .	17	Elmwood Mine, F. C. Co., Pittston township, . . .	American, .
120	21	Daniel Mahon, . .	16	Eaton Mines, J. S. & Co., Archbald borough, . . .	American, .
121	23	Richard Moffat, .	17	Bridge Mines, B. C. Co., Fourteenth ward, Scranton,	Irish, . . .
122	23	W. Carter, ...	21	Taylor Mines, D. L. & W., Lackawanna township, .	Welsh, . . .
123	23	John B. Davis, .	42	Brisbin Mine, D. L. & W., Third ward, Scranton, .	Welsh, . . .
124	23	John Buhallo, . .	42	Brisbin Mine, D. L. & W., Third ward, Scranton, .	Austrian, . .

Continued.

Occupation.	Nature or Cause of Accident.	Number.
Miner,	Slightly injured on head; fall of roof,	62
Driver,	Slightly injured; squeezed between cars,	63
Driver,	Small bone of wrist fractured; caught between cars,	64
Miner,	Slightly injured; fall of black rock,	65
Laborer,	Two toes cut off; fall of rock,	66
Laborer,	Head badly cut; fell off top of house railroad car under breaker chutes,	67
Runner,	Slightly injured on back; was unhitching rope when he fell in front of a trip of cars,	68
Mine boss,	Head and hands burned slightly; explosion of gas,	69
Miner,	Head injured; thought his shot missed fire; went back to face; shot went off and caught him,	70
Culm driver,	Injured slightly; run over by loaded mine car outside,	71
Miner,	Slightly injured; fall of coal,	72
Laborer,	Slightly injured; fall of top coal,	73
Miner,	Injured slightly; fall of black rock,	74
Door boy,	Left arm slightly injured; caught while jumping on loaded trip of cars,	75
Miner,	Slightly injured; fall of blacksmith coal,	76
Driver,	Small bone of arm broken; hit by door which he was opening in mines,	77
Driver,	Fingers squeezed; caught by wheel of car,	78
Runner,	Leg slightly injured; caught between cars,	79
Laborer,	Two ribs broken; fell on a rail,	80
Laborer,	Slightly injured; fall of coal and rock,	81
Miner,	Ankle bone fractured; fall of black rock,	82
Miner,	Bad cuts about head and arm; premature blast,	83
Driver,	Slightly injured; fall of bony coal,	84
Miner,	Injured slightly; fall of soapstone,	85
Miner,	Hand crushed while taking out block from front of car wheel in mine,	86
Miner,	Slightly injured; fall of coal,	87
Laborer,	Slightly injured; fall of top slate,	88
Outside du'er	Leg bruised; caught by car on culm dump,	89
Car runner,	Slightly injured; car jumped track and caught him,	90
Miner,	Back severely hurt; fall of coal,	91
Miner,	Both these men slightly injured; explosion of gas,	92
Miner,		93
Driver,	Two fingers broken; caught between sprag and car,	94
Miner,	Both men injured slightly; premature explosion of blast,	95
Laborer,		96
Miner,	Head slightly cut; fall of rock,	97
Slate picker,	Slightly injured; fell off trestle while playing,	98
Miner,	Burned slightly about neck and arms; explosion of gas,	99
Driver,	Injured about hips; squeezed between cars,	100
Driver,	Slightly injured; squeezed between car and pillar,	101
Miner,	Both men slightly injured; fall of six-inch coal in face of chamber; both were able to walk home,	102
Laborer,		103
Miner,	Severe cut on right side of forehead; fall of coal,	104
Miner,	Slightly injured; premature blast,	105
Driver,	Injured slightly; kicked by a mule,	106
Head man,	Slightly injured; foot hurt at head of plane,	107
Driver,	Slightly cut on face; kicked by a mule,	108
Laborer,	Injured slightly; fall of rock roof,	109
Miner,	Badly cut on face; fall of under coal,	110
Miner,	Knee joint slightly injured; fall of coal,	111
Driver,	Kicked by mule in abdomen,	112
Miner,	Slightly injured; premature explosion of blast,	113
Runner,	Bitten on shin bone by a mule,	114
Miner,	Hit on back of head by prop falling on him,	115
Miner,	Burned on face and hands; powder explosion,	116
Laborer,	Injured; kicked on head by mule,	117
Laborer,	Kicked by mule on arm, fracturing it,	118
Driver,	Slightly injured; fall of roof,	119
Door boy,	Injured slightly; caught between car and pillar,	120
Driver,	Back injured; fell in front and got caught by mine car,	121
Driver boss,	Finger taken off while in the act of taking drag off mine car,	122
Miner,	Both these men slightly injured; fall of top coal,	123
Laborer,		124

TABLE No. V.—

No.	Date.	Names.	Age.	Collieries where Accident Occurred.	Nationality.
125	Sep. 25	Wm. G. Williams,	20	Brisbin Mine, D. L. & W., Third ward, Scranton,	Welsh,
126	25	Patrick Roland,	35	Lucas Breaker, L. C. Co., Second ward, Scranton,	Irish,
127	28	George Reed,	26	Leggett's Creek Shaft, D. & H., First wd., Scranton,	Welsh,
128	30	Patrick Riley,	55	Brisbin Mine, D. L. & W., Third ward, Scranton,	Irish,
129	Oct. 2	Edward Supple,	20	Taylor Mines, D. L. & W., Lackawanna township,	Irish,
130	2	Jas. Corcoran,	60	White Oak Mines, D. & H., Archbald borough,	Irish,
131	2	Martin Noon,	15	White Oak Mines, D. & H., Archbald borough,	American,
132	3	John Malia,	16	White Oak Mines, D. & H., Archbald borough,	American,
133	5	Edward Mullen,	22	Jermyn, No. 4, J. Jermyn, Dickson City borough,	Irish,
134	7	Michael Kenny,	17	Pierce Mines, P. C. Co., Archbald borough,	American,
135	8	Michael Ruane,	26	Shaft No. 5, Penn'a C. Co., Jenkins township,	Irish,
136	12	Martin C. Kearney	35	Fair Lawn Mines, F. C. Co., Seventh wd., Scranton,	Irish,
137	13	James Williams,		Coal Brook Mines, D. & H., Carbondale City,	Welsh,
138	14	Dom'k Needham,	37	Continental Mines, D. L. & W., Lackawanna twp.,	Irish,
139	14	John Leibtreau,	36	Continental Mines, D. L. & W., Lackawanna twp.,	German,
140	16	Michael Kelly,	19	Cayuga Mine, D. L. & W., Third ward, Scranton,	Irish,
141	16	August Barber,		Grassy Island Mines, D. & H., Olyphant borough,	German,
142	23	William Morgan,	27	Dodge Mines, D. L. & W., Lackawanna township,	Welsh,
143	28	James Vanston,	42	Mt. Pleasant Mines, W. T. S., Fourteenth ward, Scranton.	English,
144	29	Thomas Murphy,	16	Mt. Pleasant Mines, W. T. S., Fourteenth ward, Scranton.	American,
145	31	Wm. Maloney,	18	No. 1 Shaft, D. & H. C. Co., Carbondale city,	American,
146	Nov. 1	Thos. Armstrong,	50	Shaft No. 5, Penn'a C. Co., Dunmore borough,	Irish,
147	2	Thos. D. Phillips,	38	Cayuga Mine, D. L. & W., Third ward, Scranton,	Welsh,
148	6	Mich. Mortimer,	48	Fair Lawn Mines, F. C. Co., Seventh wd., Scranton,	Irish,
149	12	John Gallagher,	50	Green Ridge Slope, O. L. J., Dunmore borough,	Irish,
150	18	John Cawley, 1st,	48	Capouse Mine, L. I. & C. Co., Twenty-first ward, Scranton.	Irish,
151	19	James Roach,	22	Brisbin Mines, D. L. & W., Third ward, Scranton,	English,
152	19	James Benedict,	26	Brisbin Mines, D. L. & W., Third ward, Scranton,	Hungarian,
153	20	Pat'k A. Harran,	30	Bellevue Shaft, D. L. & W., Lackawanna township,	Irish,
154	20	Thomas Moran,	25	Capouse Mines, L. I. & C. Co., Twenty-first ward, Scranton.	Irish,
155	20	Michael Gaughan,	50	Green Ridge Slope, O. S. J., Dunmore borough,	Irish,
156	24	Lewis Jones,	40	Oxford Mines, D. L. & W., Fifth ward, Scranton,	Welsh,
157	27	Ed. Carter,	45	Taylor Mines, D. L. & W., Lackawanna township,	Welsh,
158	27	Edward Dean,	38	Filer's Slope, G. T. & Co., Winton borough,	Irish,
159	27	John Moran,	28	Filer's Slope, G. T. & C.., Winton borough,	Irish,
160	Dec. 7	Thomas Walsh,	19	Continental Mines, D. L. & W., Lackawanna twp.,	Irish,
161	8	Henry Weable,	14	Taylor Mines, D. L. & W., Lackawanna township,	German,
162	11	Mike Fryal,	21	Shaft No. 5, Penn'a C. Co., Dunmore borough,	Irish,
163	14	Matthew White,	15	Grassy Island Mines, G. I. C. Co., Winton borough,	American,
164	14	John Jones,	17	Lackawanna C. Co. Mine, Blakeley borough,	Welsh,
165	15	Thos. Murray,	17	Grassy Island Mines, D. & H., Olyphant borough,	Irish,
166	16	James Cluces,	27	Von Storch Mines, D. L. & W., Second wd., Scranton,	Irish,
167	16	James Gilbride,	28	Von Storch Mines, D. L. & W., Second wd., Scranton,	Irish,
168	22	Michael Cawley,	55	Diamond Mines, D. L. & W., Twenty-first ward, Scranton.	Irish,
169	24	G. W. Canterbury,	59	Capouse Mines, L. I. & C. Co., Twenty-first ward, Scranton.	American,
170	30	James Moran,		Elk Creek Mines, T. Brennan, Fell township,	Irish,

NOTE.—There were 138 slight accidents in the First Mine District in 1885.

Continued.

Occupation.	Nature of Accident.	No.
Laborer, . .	Burned on hands and face; cartridge exploded while handling it,	125
Carpenter, .	Shoulder dislocated; jacket caught while putting belt on pully,	126
Laborer, . .	Slightly injured between shoulders; fall of top rock,	127
Culm man, .	Injured slightly; hit by loaded car,	128
Laborer, . .	Ankle slightly injured; fall of top coal,	129
Miner, . . .	Face cut; fall of six-inch bony coal,	130
Driver, . . .	Foot slightly hurt; mule stepped on it,	131
Runner, . .	Head injured by piece of coal falling off a car,	132
Laborer, . .	Back and leg bruised; fall of bell from roof,	133
Driver, . . .	Kicked on head by mule,	134
Laborer, . .	Slightly injured on back; fall of roof,	135
Miner, . . .	Injured slightly; premature blast,	136
Miner, . . .	Slightly injured; fall of roof,	137
Miner, . . .	Rib broken and otherwise bruised; fall of roof,	138
Laborer, . .	Slightly injured, same fall,	139
Runner, . .	Thumb cut off; caught between bumpers of cars,	140
Co. man, . .	Knocked off track on runaway by trip of cars.	141
Miner, . . .	Injured, badly bruised about head and face; fall of roof,	142
Miner, . . .	Ankle slightly injured; fall of loose coal,	143
Driver, . . .	Slightly bruised on hips; caught between car and pillar; car jumped the track and caught him,	144
Laborer, . .	Injured slightly; caught between car and pillar,	145
Laborer, . .	Small bone of left leg broken; fall of roof,	146
Miner, . . .	Thumb cut off; fall of coal,	147
Miner, . . .	Leg slightly injured; shot missed fire twice; he thought it missed third time; going back got hit with coal,	148
Laborer, . .	Ankle dislocated; caught between track and piece of rock that fell on it,	149
Miner, . . .	Slightly injured; fall of roof,	150
Laborer, . .	Slighly injured by fall of rock,	151
Laborer, . .		152
Miner, . . .	Injured by premature blast,	153
Miner, . . .	Slightly injured by fall of piece of coal,	154
Miner, . . .	Injured slightly; premature blast,	155
Miner, . . .	Collar-bone broken while in the act of lifting a car,	156
Miner, . . .	Slightly injured; explosion of gas,	157
Miner, . . .	Slightly injured; premature blast,	158
Miner, . . .	Burned slightly; premature blast,	159
Headman, .	Injured; jammed between loaded car and gate at surface landing of shaft,	160
Door-boy, .	Injured; squeezed between loaded car and roof,	161
Laborer, . .	Slightly injured; squeezed between car and prop,	162
Driver, . . .	Injured; kicked by mule on head,	163
Driver, . . .	Injured; fall of roof,	164
Laborer, . .	Slightly injured; fall of roof,	165
Miner, . . .	Injured slightly; premature blast,	166
Laborer, . .		167
Miner, . . .	Leg and arm slightly injured; fall of slate,	168
Miner, . . .	Slightly injured; hit by prop falling on him,	169
Miner, . . .	Slightly injured; fall of top rock,	170

TABLE No. VI.—*List of accidents occurring in the mines of the First*

Number.	Date.	Names.	Age.	Colliery where Accident Occurred.	Nationality.
1	Jan. 2	Charles Clash, . . .	16	Barnum No. 2, Penna. Coal Co., Marcy township,	German, . . .
2	5	Peter Fulmer, . . .	33	Mo ier Mines, B. C. Co., Hughestown borough,	German, . . .
3	7	David Phillips, . . .	25	Bridge shaft, B. C. Co., Fourteenth ward, Scranton	Welsh, ...
4	8	Lewis T. Jones, . .	35	Tripps Air Shaft, D. L. & W., Twenty-first ward, Scranton, ...	Welsh, ...
5	20	James Cavanaugh,	23	Taylor Mines, D. L. & W., Lackawanna twp., . .	Irish, ...
6	Feb. 17	Reese Williams, . .	40	Von Storch Mines, D. & H., Second ward, Scranton, ...	Welsh, ...
7	Mar. 24	Owen R. Williams, .	40	Consolidated Mines, H. C. & I. Co., ...	Welsh, ...
8	24	John Byrne, ...	. .	No. 1 Shaft Mines, D. & H., Carbondale City, . .	Irish, ...
9	27	Michael Donnelly, .	50	Jermyn No. 4, Mines, J. J., Dickson City boro.,	Irish, ...
10	April 2	Thomas Bowen, . .	20	Lackawanna C. Co. Breaker, Blakely borough, .	American, . .
11	4	Peter Gillespie, . .	26	Eaton Mines, J. S. & Co., Archbald borough, . .	American, . .
12	9	James Short, ...	24	Marvine Shaft, D. & H., First ward, Scranton, .	English, . . .
13	14	Ebenezer Moore, .	36	Law Shaft, Penna. C. Co., Pittston township, . .	American, . .
14	16	M. Cunningham, .	40	Consolidated Mines, H. C. & I. Co., ...	Irish, ...
15	21	James McGowen, .	45	White Bridge Tunnel, D. & H., Carbondale City,	Irish, ...
16	21	Michael Connors, .	15	do. do. do.	American, . .
17	23	David Daniels, . . .	65	Von Storch Mines, D. & H., Second ward, Scranton	Welsh, ...
18	23	John Jenkins, . . .	35	Brisbin Mines, D. L. & W., Third ward, Scranton,	Welsh, ...
19	May 14	Robert Giles, . . .	32	Halstead Mines, D. L. & W., Marcy township, .	English, . . .
20	June 5	Martin Durkin, . .	35	Central Mines, D. L. & W., Fifteenth ward, Scranton, ...	Irish, ...
21	16	Robert Graham, . .	35	Old Forge Mines, Penna. C. Co., Old Forge twp.,	Scotch, ...
22	23	Michael Lewells, .	30	Jermyn No. 4, Mines, J. J. Dickson, City boro.,	Polish, ...
23	26	James W. Davis, . .	36	Capou-e Mines, L. I. & C. Co., Twenty-first ward, Scranton, ...	Welsh, ...
24	July 2	Collins Mathews, .	45	Brisbin Mine, D. L. & W., Third ward, Scranton,	Welsh, ...
25	13	Patrick Wells, . . .	48	White Oak Mines, D. & H., Archbald borough, .	Irish, ...
26	14	Edward Maloi, . . .	42	Cayuga Mine, D. L. & W., Third ward, Scranton,	Irish, ...
27	14	John McGovern, .	60	Leggett's Creek Mines, D. & H., First ward, Scranton, ...	Irish, ...
28	18	James White, . . .	24	No. 13 Shaft Mine, Penna. C. Co., Old Forge twp.,	Scotch, ...
29	21	Joseph Knowles, . . .		Barnum Shaft, Penna. C. Co., Marcy township, ...	
30	22	Henry Bryson, . . .	31	No. 14 Shaft, Penna. C. Co., Jenkins township, .	Scotch, ...
31	25	David Jones, ...	35	Gipsy Grove Mines, Penna. C. Co., Dunmore borough, ...	Welsh, ...
32	28	David James, . . .	29	Taylor Shaft Mines, D. L. & W. Lackawanna twp.,	Welsh, ...
33	29	James Walker, . . .	14	Dunmore Screens, Penna. C. Co., Dunmore boro.,	American, . .
34	31	Patrick Franklin, .	50	Tunnel No. 1, Penna. C. Co., Pittston township,	Irish, ...
35	Aug. 15	Michael Coggins, .	26	Sloan Mines, D. L. & W., Lackawanna twp., . .	Irish, ...
36	31	James P. Delaney,	32	Shaft No. 6, Penna. C. Co., Jenkins township, .	American, . .
37	Sept. 2	Thomas Riley, . . .	50	Green Ridge Slope, O. S. J., Dunmore borough,	Irish, ...
38	3	Sidney Somers, . .	35	Shaft No. 5, Penna. C. Co., Jenkins township, .	American, . .
39	3	James Healy, . . .	20	do. do. do.	American, . .
40	3	Solon Corse, ...	50	Hyde Park Shaft, D. L. & W., Fifth ward, Scranton, ...	American, . .
41	7	Michael Purcell, . .	45	Shaft No. 11, Penna. C. Co., Jenkins township, .	Irish, ...
42	7	Daniel Haggerty, .	45	Spencer Mines, S. Bro.'s, Dunmore borough, .	Irish, ...
43	8	Thomas Lavell, . .	54	Leggett's Creek Mines, D. & H., First ward, Scranton, ...	Irish, ...
44	9	John Lyden, ...	21	Greenwood Slope, Penna. C. Co., Lackawanna township, ...	Irish, ...
45	15	William James, . .	60	Powderly Slope, D. & H., Carbondale City, . .	Welsh, ...
46	18	Andrew Fagan, . .	24	Forest City Mine, H. C. & I. Co., Clifford twp.,	American, . .
47	19	Anthony Gownley,	50	Slope No. 4, Penna. C. Co., Jenkins township, .	Irish, ...
48	23	John McKinney, . .	34	Mt. Pleasant Mines, W. T. S., Fourteenth ward, Scranton, ...	Irish, ...
49	24	Patrick Gallagher, .	28	Law Shaft, Penna. C. Co., Pittston township, . .	Irish, ...
50	24	John Sullivan, . . .	45	No. 2 Diamond Shaft, D. L. & W., Twenty-first ward, Scranton, ...	Irish, ...
51	Oct. 1	William Morrisson,	25	Halstead Mine, D. L. & W., Marcy township, . .	Irish, ...
52	12	Hugh Devers, . . .	20	Tunnel No. 1, Penna. C. Co., Pittston township,	American, . .
53	24	Daniel Williams, . .	33	Lackawanna Coal Co. Mine, Blakely borough, . .	Welsh, ...
54	24	Morgan Roberts, .	27	do. do. do.	Welsh, ...
55	26	August Rouer, . . .	26	Bellevue Slope, D. L. & W., Lackawanna twp., .	German, . . .

Anthracite Mine District for the year ending December 31, 1885.

Occupation.	Widows.	Orphans.	Nature or Cause of Death.	Number.
Foot boy,	0	0	Killed; fell down the shaft from one vein to the other,	1
Miner,	1	2	Killed instantly; fall of top rock,	2
Machinist,	0	0	Killed; got knocked down the shaft by a piece of plank falling on him,	3
Shaft sinker,	1	0	Killed; fell out of hoisting bucket in new air shaft a distance of about 30 feet,	4
Laborer,	0	0	Killed; fall of top coal,	5
Brattice man,	0	0	Killed; was riding on car, T iron rail, caught his head between car rail and T iron, breaking his neck,	6
Miner,	0	0	Seriously burned; spark fell from lamp into loose powder in keg while in the act of making cartridge,	7
Miner,			Seriously burned; cartridge exploded while forcing it into hole with butt end of drill; died next day,	8
Miner,	1	4	Killed; fall of bony coal,	9
Laborer,	0	0	Killed; caught between car and one of the timber posts supporting breaker,	10
Miner,	1	2	Killed instantly; was tamping hole when cartridge exploded,	11
Miner,	0	0	Seriously injured; fall of checkered coal; died about 4 hours after,	12
Laborer,	0	0	Killed instantly; fall of top coal and roof,	13
Laborer,	1	.	Seriously injured on back; fall of top slate; not reported serious; died on 18th,	14
Miner,	1	8	Killed instantly; fall of roof,	15
Driver,	0	0	Killed instantly; fall of roof. Connors was taking an empty car into McGowan's chamber, when the roof fell and killed them both,	16
Brattice man,	0	0	Smothered; brattice fell on him while repairing it; caused by an explosion of gas,	17
Laborer,	0	0	Killed about 40 feet back from face on main road; fall of rock,	18
Machinist,	1	2	Killed instantly by runaway car on slope,	19
Miner,	1	1	Seriously injured; fall of rock; died 2 hours after,	20
Miner,	1	6	Killed instantly; fall of coal,	21
Laborer,	1	1	Killed almost instantly; fall of roof,	22
Miner,	1	6	Killed; fall of bony coal,	23
Laborer,	1	7	Killed instantly; fall of top coal; wife and seven children in Wales,	24
Laborer,	1	5	Killed instantly; fall of 18-inch coal,	25
Laborer,	1	5	Killed; fall of top coal,	26
Miner,	0	2	Seriously injured; fall of 6-inch bony coal at face of chamber; died on night of 18th,	27
Miner,	1	0	Killed; fall of roof,	28
			Reported slightly injured on Friday, 18th; died on 20th, as kidneys were injured; doctor thought he was slightly injured,	29
Miner,	1	4	Killed instantly; fell down shaft a distance of 265 feet; fall of bucket,	30
Miner,	1	2	Seriously injured; thought his blast missed fire; exploded while trying to remove the match,	31
Miner,	1	2	Killed; fall of blacksmith's bench of coal,	32
Slate picker,			Seriously injured; caught in pony rolls; died 10 hours after,	33
Laborer,	1	4	Seriously injured; fall of rock; was working alone and was under the rock for 6 hours; died next morning,	34
Laborer,	0	0	Killed; caught between carriage and side of shaft; fell to bottom, a distance of 275 feet,	35
Miner,	1	3	Killed by a piece of loose coal sliding off bottom bench, striking him on the back,	36
Miner,	1	5	Killed; fall of roof while in the act of barring down coal,	37
Miner,	0	0	Killed; fall of roof,	38
Laborer,	0	0	Killed; same fall,	39
Miner,	1	6	Killed; fall of coal while in the act of undermining it,	40
Miner,	1	8	Killed; fall of rock roof,	41
Miner,	1	6	Killed; fall of roof,	42
Miner,	1	2	Right leg broken; fall of middle bench of coal; died on morning of 17th,	43
Laborer,	0	0	Killed; hit by coal from blast in pillar fired in next chamber,	44
Miner,			Seriously injured; fall of top coal; died 9 o'clock same night,	45
Footman,	0	0	Killed; caught under hoisting carriage while crossing under it at foot of shaft,	46
Miner,	1	5	Killed; fall of rider coal and black rock,	47
Miner,	1	2	Killed; fall of top coal,	48
Miner,	0	0	Seriously injured; fall of roof; died same night,	49
Water bailer,	1	6	Killed; fall of top coal,	50
Laborer,	0	0	Seriously injured; fall of rock roof,	51
Laborer,	0	0	Killed; shot by blast through rib,	52
Miner,	0	0	Killed; fall of roof,	53
Laborer,	0	0	Killed; same fall,	54
Laborer,	1	1	Killed; fall of rock roof,	55

TABLE No. VI.

Number.	Date.	Names.	Age.	Colliery where Accident Occurred.	Nationality.
56	Oct. 31	David Evans, ...	50	Holden Mine, D. L. & W., Lackawanna township,	Welsh, ...
57	Nov. 4	John Hogan, ...	58	Central Mine, D. L. & W., Fifth ward, Scranton,	Irish, ...
58	4	Patrick White, . . .	59	Central Mine, D. L. & W., Fifth ward, Scranton,	Irish, ...
59	6	Michael Dougherty,	44	Old Forge Mines, Penna. C. Co., Old Forge twp.,	Irish, ...
60	7	Patrick Toole, . . .	48	Greenwood Shaft, P. A. C. Co., Lackawanna township, ...	Irish, ...
61	11	William Saar, . . .	23	Shaft No. 5, Penna. C Co., Dunmore borough, .	American, . .
62	13	John D. Griffiths, .	12	Jermyn No. 4, Breaker, J. J. Dickson, City boro.,	American, . .
63	16	John Quinn, ...	58	Coal Brook Mines, D. & H , Carbondale City, . .	Irish, ...
64	27	George Sherman, .	30	Capouse Mines, L. I. & C. Co., Twenty-first ward, Scranton, ...	American, . .
65	27	John Mahon, ...	27	Dickson Mine, D. & H. Co., First ward, Scranton,	Irish, ...
66	Dec. 7	John McCormick, .	60	Continental Mine, D. L. & W., Lackawanna twp.,	Irish, ...
67	14	William Simon, . .	60	Lackawanna Coal Co. Mine, Blakely borough, .	Welsh, ...
68	14	Henry Freegans, .	28	Jermyn No. - Mine, D. & H., Jermyn borough. .	English, . . .
69	17	Henry Williams, . .	51	Von Storch Mines, D. & H., Second ward, Scranton, ...	Welsh, ...
70	24	Lewis R. Evans, . .	55	Bellevue Slope, D. L. & W., Lackawanna twp., .	Welsh, ...
71	25	Richard Taylor, . .	25	North-Western Slope, N. W. C. Co., Fell twp., .	English, . . .
72	25	John Luke, ...	45	North-Western Slope, N. W. C. Co., Fell twp., .	Welsh, ...

NOTE.—Tables Nos. 1, 2, and 3, contain a list of the names of all persons killed and injured in and about the Anthracite Coal Mines in the Eastern District, up to the time the district got divided and a new mine inspector was appointed on October 26, 1885.

First District.

There was mined in the First District in 1885, 7,258,853.10 tons of coal.

There were 54 deaths in the First District; there was one death to every 134,423 tons of coal mined.

There were 31 widows in the First District; there was one widow to every 234,157 tons of coal mined.

There were 106 orphans in the First District; there was one orphan to every 68,480 tons of coal mined.

—*Continued.*

Occupation.	Widows.	Orphans.	Nature or Cause of Death.	Number.
Miner,	1	5	Reported slightly injured; fall of roof; died November 4.	56
Comp'y man,	1	. .	Both these men were seriously burned by an explosion of CH_4 gas; they were working on a gangway unloading a car of dirt, when a fall came in old chamber close to where they were working, displacing gas forcing	57
Comp'y man,	1	.	it on to their naked lights causing the explosion; White died on 5th	58
Miner,	1	7	and Hogan on the 6th, Killed; fall of black rock,	59
Footman,	1	5	Seriously injured; caught between hoisting carriage and side of shaft; died same evening,	60
Laborer,	0	0	Killed; fall of roof,	61
Slate picker,	0	0	Seriously injured; caught in breaker machinery; died same evening,	62
Miner,	0	0	Killed; fall of roof,	63
Miner,	1	3	Killed instantly; fall of roof,	64
Miner,	1	0	Killed instantly; fall of coal,	65
Outside h'dman	1	5	Killed; squeezed between loaded mine car and gate on surface landing of shaft,	66
Miner,	0	0	Killed instantly; fall of roof,	67
Laborer,	0	0	Killed; fall of roof,	68
Laborer,	0	0	Killed instantly; fall of roof,	69
Miner,	1	0	Killed; fall of roof,	70
Rockman,	1	1	Both these men were seriously injured by an explosion of giant powder; three holes missed going off after being tried twice from the battery; the chargeman, Taylor, was in the act of cleaning out the last hole,	71
Miner,	0	1	when the cartridge exploded; the accident occurred at 4 o'clock A. M., Taylor died at 7 o'clock A. M., and Luke at 4 o'clock P. M.,	72
	39	134		

CAUSE OF FATAL ACCIDENTS IN THE FIRST DISTRICT IN 1885.

Explosion of gas,	2	Equal to	3.70	Per cent..
Explosion of powder and blasts,	6	"	11.11	"
Falls of coal,	16	"	29.63	"
Falls of roof,	19	"	35.19	"
Machinery outside,	2	"	3.70	"
Falling down shafts,	3	"	5.55	"
Caught by hoisting carriage,	2	"	3.71	"
Miscellaneous, inside,	2	"	3.70	"
Miscellaneous, outside,	2	"	3.71	"
Total,	54		100.00	

TABLE V.—*Showing the grand total of employés, horses, mules, engines, pumps, boilers, and powder employed, tons of coal mined and shipped, fatal and non-fatal accidents, &c., in the First Anthracite Mine District, for the year ending December 31, 1885.*

NAME OF COUNTIES AND PARTS OF COUNTIES IN THE DISTRICT.	Total number of men employed.	Total number of boys employed.	Total number of horses and mules employed.	Total number of engines and pumps employed.	Total number of boilers employed.	Total number of kegs of powder consumed.	Total number of tons of coal produced.	Total number of tons of coal shipped.	Total number of fatal accidents.	Total number of non-fatal accidents.	Total number of times air measurements were taken.
Lackawanna county:											
Delaware, Lackawanna and Western Railroad Company,	3,963	1,770	888	183	294	55,569	2,101,111.16	1,997,757.11	15	.....	Fifty-two times a year.
Delaware and Hudson Canal Company,	3,543	1,435	561	123	174	51,950	1,864,442.07	1,647,274.17	14	.....	
Pennsylvania Coal Company,	923	350	135	39	47	19,118	657,345.00	621,716.00	6	.....	
Individual operators,	5,087	2,361	808	207	255	91,158	2,514,065.00	2,397,245.10	18	.....	
Total for Lackawanna county,	13,518	5,916	2,392	552	770	217,795	7,139,964.03	6,663,993.18	53	.....	
Susquehanna county,	153	63	30	7	7	4,308	84,559.07	83,163.13	1	.....	
Totals,	13,671	5,979	2,422	559	777	222,103	7,224,423.10	6,747,157.11	54	194	
Local coal sale mines,	204	15	36	8	6	1,202	33,534.00	.....	.....	.....	
Grand totals,	13,875	5,994	2,458	567	783	223,305	7,258,853.10	6,747,157.11	54	194	

SECOND DISTRICT

Of the Anthracite Coal Field.

OFFICE OF INSPECTOR OF COAL MINES,
PITTSTON, PA., *March 9, 1886.*

To Honorable J. SIMPSON AFRICA,
Secretary of Internal Affairs.

SIR: I have the honor of presenting my first annual report as inspector of coal mines for the Second district of Luzerne and Sullivan counties, as required by section one, article two, of the act entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines," approved the 30th day of June, 1885.

In my commission I was directed to assume the duties of the office October 26, 1885; therefore, my report as to accidents covers only that part of the year beginning October 26 and ending December 31, 1885.

Tables have been compiled enumerating the accidents which proved fatal, and those which did not prove fatal; also, tables showing the present state of ventilation in all the collieries, the number of days worked by each breaker, the number of persons employed in and around the mines, and the amount of coal produced from each colliery, together with other important statistics and useful information.

The number of lives lost during the above-stated period were eight, leaving five widows and sixteen orphan children. The number of accidents not proving fatal, were twenty-one; a few of those were of a very slight character and only caused a loss of a few days.

In my investigation into the causes of those accidents, I find that with due care a great many of them could be avoided. The miners, as a rule, get very careless in regard to their own safety; with proper care on their part, to see that everything is safe before starting and as they advance with their work, there would be less accidents to record. The causes, number, and per centum of fatal accidents are classified as follows:

From falls of roof and coal, ...	2	being	25	per cent.
From explosion of gas, ...	3	"	37½	"
From cars in the mines, ...	1	"	12½	"
By cars outside, ...	1	"	12½	"
By falling down shaft, ...	1	"	12½	"
Total, ...	8		100	

I learned from the inspectors of the First and Third districts, that the number of fatal accidents for the whole of 1885 were fifty-three, (53,) and the total production of coal during 1885 was 3,881,902.09 tons, which shows a production of 73,243.04 tons per life lost. The total number of persons employed during 1885 is 10,656, and the fatal accidents are equal to a little over 0.20 of one per cent, or one for every 201.05 of the whole number employed. The results of my investigation into the condition of the collieries, and a descriptive record of fatal accidents, are fully set forth in the report, to which you are most respectfully referred.

Very respectfully submitted,

Your obedient servant,

H. McDONALD,

Inspector of Coal Mines.

General Condition of the Collieries.

I entered upon the duties appertaining to the office of inspector, October 26, 1885, and immediately entered upon a tour of general inspection throughout the collieries of my district. The time being short before the close of the year, I was kept very busy trying to get around to them. In my examination of the different collieries of my district, I found them in comparatively good condition as compared with the requirements of the law. I found all the breakers having all the dangerous parts of their machinery fenced and boxed off; and here let me state that the officers of the several collieries, without one exception, were courteous and obliging to me in my investigation, and gave me all the needed information required. The dangers in the underground workings are much more difficult to remove, as each day's work places a different aspect on the workings. The miner's occupation is a very hazardous one, therefore, it requires them to be very cautious as they advance with their work, as a blast fired may leave a comparatively safe place a very dangerous one, so that every hour in the day the inside workings of a mine are changing for the safety or unsafety of the employés therein.

In going through the collieries of this district, I find the majority of them kept in good condition; the ventilation is good, and conducted to the face of the workings. The refuse of the mines is carefully kept back from the roads, and a strict discipline exercised, while others, I am sorry to say, do not give the same attention to ventilation, roads, or anything else in particular, only to get out all the coal they can. This, to me, is false economy on their part; if those bosses would give more attention toward furnishing their men with more pure, fresh air, while they are at work, (and right here let me say that, in most cases referred to, the companies have furnished ample means to provide the same,) and see that the roads are kept free from the refuse of the mine, timber, and water,

they would be fulfilling the requirements of the law, doing their duty toward their fellow-workmen, and removing the cause for a number of accidents in the mines.

Fatal Accident by Falling Down Shaft.

ACCIDENT, No. 13.—Laurence Murry, Irish, rock miner, aged thirty-five years, was fatally injured in the Forty Fort shaft, on November 28, 1885, and died from his injuries, December 17, 1885. He and three other workmen were repairing water-troughs in the pump shaft. Standing on plank platform across the shaft to get one of the troughs into place, it required one of the men to go below the platform to turn the trough. About six feet below the top platform there was a plank across the shaft, placed there about one year ago. While they were repairing the pump, Murry went down on this plank, and says he tested it and said it was all right. The men above passed one end of the trough down to him, and as the extra weight came on the plank, it broke in two, letting him fall about seventy-five feet down the shaft to another platform, which stopped him from going to the bottom.

Fatal Accidents by Falls of Roof and Coal.

ACCIDENT, No. 4.—Michael Flaherty, Irish, miner, aged sixty years, was instantly killed in shaft No. 6, Pennsylvania Coal Company colliery, Pittston, December 1, 1885. Flaherty was driving an entrance on right side of his chamber, and had holed the entrance that morning. After holing the entrance on right side, he started to drill a hole in the bottom bench, his partner going around to the chamber they were driving to, to make the entrance larger. When he got around to the entrance he heard the coal working. He called to Flaherty to get away, but the warning came too late, and a large piece of coal fell from a slip, off the side of the entrance, about a ton in weight, on him with the above result.

ACCIDENT, No. 6.—Laurence Grogan, Irish, miner, aged fifty years, was instantly killed in the Black Diamond colliery, Mill Hollow, December 4, 1885. He fired a blast, and knocked a prop out with the shot he fired, and while in the act of moving the coal to get his prop up again, a large piece of top rock came down on him, the rock being 8×6 feet, and six inches thick. Had he taken the precaution to examine his roof before going under it, in all probability the accident would not have occurred.

Fatal Accidents by Mine and Railroad Cars.

ACCIDENT, No. 24.—Robert Jeffry, water-bailer, aged twenty-seven years, was instantly killed in the Jackson drift, Bernice, Sullivan county, April 7, 1885. Having finished his day's work, he was waiting at the bottom of the chamber he had been working in, while the driver made up his loaded trip of cars, so he could go out after him with his water car so as to take it to another part of the mine so as to be in readiness for work on the morrow,

and the driver had brought up two loaded cars and was bringing a third car, and when a few feet from the other cars the driver unhitched his mule, leaving the loaded car to run and bump against the other two. While the car was thus coming in contact with the others, Jeffry put out his hand and caught hold of the coupling, and in trying to make the coupling while the car was moving, he extended his head between the cars, and was caught by the bumpers, crushing his skull, and causing instant death.

ACCIDENT, No. 1.—Patrick Golden, inside driver, aged seventeen years, was fatally injured in slope, No. 4, Pennsylvania Company, Pittston, November 5, 1885; after being taken home died in one hour and a half. There is a drift connected with this slope, and it was while he was coming out of this drift on his loaded cars that he was caught by the roof and dragged off, and the cars squeezed him, with the above result. It is supposed that his light went out, although he was only about one hundred feet from the mouth of drift and could see daylight.

ACCIDENT, No. 8.—Patrick Coolican, outside laborer, aged thirty-five years, was fatally injured at the outside chutes of shaft, No. 4, Pennsylvania Coal Company, November 12, 1885. Died from his injuries November 19, 1885. He was a loader of fine coal. He had loaded two cars. There was an empty lumber truck attached to them. He went behind the truck to shove them out from the chutes to other loaded cars. The man that works with him detached an empty car down grade to have it loaded with rock, and told Coolican the car was coming, but he failed to get out of the way in time, and was caught between the car and truck. Had Coolican not tried to get to the brake of the car and crossed the road, the accident would not have happened.

Fatal Accidents by Explosion of Fire-Damp.

ACCIDENTS, Nos. 21, 22, and 23.—George Martin, a night fire-boss, aged sixty-eight years, and Joseph Cleasby, the day fire-boss, aged thirty-four years, and Peter Stone, a laborer, aged thirty-four years, were fatally burned by an explosion of gas in the Mill Creek colliery, Plains township, December 14, and died therefrom December 15, 1885. Peter Coffey, Samuel Morris, Nicholas Gray, and Joseph Parduski were slightly burned at the same time. In the morning, Joseph Cleasby examined the mine and found gas in several chambers in No. 12 lift, Top vein, and he reported and also notified the miners that worked in those chambers not to go into them, as he would go and remove the gas so that they could go to work. The mine-boss sent George Martin, his father, with Cleasby to help him. They removed the gas out of all the chambers but one, which was Peter Coffey's chamber, and while on the gangway at the bottom of Coffey's chamber, the explosion occurred. Coffey says the fire-boss told him his chamber was all right, to go to work, and that when he got to the face of the chamber the explosion occurred by his igniting the gas, with the above

result. The two fire-bosses, having their skulls fractured with the concussion, were unable to speak, to give a statement how the explosion occurred.

Fire-bosses should give the men under their charge to understand, each morning, when they find gas in their places to stop wherever it is safe until they come back, or if too dangerous, to send them home and not let them visit their brother-workmen, as there is a possibility of the fire-boss not seeing them, thereby causing an accident.

Classification of Fatal Accidents which Occurred from October 25 to December 31, 1885, Inclusive.

CAUSES OF ACCIDENTS.	Number.	Per centum.
From falls of roof and coal,	2	25.00
From explosion of gas,	3	37.50
By cars in the mines,	1	12.50
By cars outside,	1	12.50
By falling down shaft,	1	12.50
Total,	8	100.00

Injuries not Proving Fatal.

CAUSES OF ACCIDENTS.	Number.	Per centum.
By falls of roof and coal,	6	28.57
By explosi n of gas,	8	38.09
By cars underground,	3	14.29
Miscellaneous causes, inside,	4	19.05
Total,	21	100.00

Number of Employees and Tons of Coal Mined per Person Employed.

NAME OF COMPANIES.	Number of persons employed.	Coal mined per employé—tons.
Pennsylvania Coal Company,	2,654	397.26
Lehigh Valley Coal Company,	2,272	361.58
Delaware, Lackawanna and Western Railroad Company,	678	266.19
Delaware and Hudson Canal Company,	1,114	375.12
Butler Coal Company,	947	349.16
Wyoming Valley Coal Company,	579	360.53
Miscellaneous coal companies,	2,412	368.72
All coal companies,	10,656	364.29

Average Number of Days Worked and Tons of Coal Mined Per Day for Each Person Employed.

NAME OF COMPANIES.	Days worked.	Tons mined per employé.
Pennsylvania Coal Company,	192.90	2.05
Lehigh Valley Coal Company.	154.14	2.34
Delaware, Lackawanna and Western Railroad Company,	186.00	1.43
Delaware and Hudson Canal Company,	198.00	1.89
Butler Coal Company,	151.71	2.30
Wyoming Valley Coal Company,	250.55	1.43
Miscellaneous coal companies,	180.68	2.04
All coal companies,	187.71	1.94

COLLIERY IMPROVEMENTS DURING 1885.

The Pennsylvania Coal Company.

At the Barnum Shaft, No. 2 was sunk from the Ross to the Red Ash vein, a distance of two hundred and thirteen feet. This improvement opens a large area of good coal for this company.

Pennsylvania Coal Company.

Shaft No. 14, located in Jenkins township, having reached the Fourteen-Foot vein, at a depth of three hundred and sixty-five feet. This shaft cuts the Seven Foot vein at a depth of two hundred and fifty-six feet. Its use will be for hoisting coal. The size is $12' \times 52'$. They are sinking the second opening, and have reached the Seven Foot vein, at a distance of two hundred and forty-six feet. The breaker is completed all but putting in the machinery.

Lehigh Valley Coal Company.

At the Wyoming Colliery a tunnel was driven from the lower to the upper split of the Baltimore vein, to be used for ventilation.

Delaware, Lackawanna and Western Railroad Company

Are sinking the second opening to the Pettebone shaft. There is no work doing in the mine shaft, as it has reached the vein they intended to work some time ago.

Delaware and Hudson Canal Company.

At the Pine Ridge Colliery, two shafts were sunk, one in the Baltimore vein, to a depth of one thousand feet. The size is $7\frac{1}{2}' \times 12'$, with a gradient of ten degrees. The other is sunk in the Hillman vein, to a depth of

six hundred feet. The sectional area is 8×12 feet; gradient, fourteen degrees. These slopes are intended to maintain the present production of the colliery.

Butler Coal Company.

At the Boston Colliery, two tunnels were driven from the Red Ash vein to Red Ash, a distance of four hundred feet; one tunnel to transport coal, the other for ventilation. They have, likewise, sunk two slopes on same vein, one six hundred and fifty feet, the other one hundred and fifty feet, which open up some good coal for this company, as some time ago this colliery was considered to be worked out.

Butler Coal Company.

At the Butler Colliery a new slope was sunk on the Pittston vein, a depth of one hundred and fifty feet, for the purpose of robbing or taking the pillars out.

Haddock & Steel.

A new air-shaft was sunk by this company from the surface to copper vein, a distance of one hundred and sixty feet. Size of shaft, 16×16 feet. A new twenty-foot Guibal fan was erected thereon; face of fan, eight and one half feet. Two side inlets, diameter eight and one half feet, working speed sixty revolutions per minute, giving ninety thousand cubic feet of air exhausted per minute, with one and a half inches of water gauge. The gearing is direct. This fan was started July 26, 1885, taking the place of the old fan.

W. G. Payne & Co.

A new twenty-five-foot fan, of the Guibal pattern, was placed in position at the East Boston Colliery, in place of the fifteen-foot fan which was done away with. The new fan is placed over the same shaft as the old one was, giving a result of one hundred and twenty-three thousand three hundred and eighty-six cubic feet of air exhausted per minute, with a water-gauge of eight tenths of an inch, with a working speed of forty revolutions per minute. It was started December 2, 1885. It is direct in gearing. This colliery has the means now to give their men all the fresh air they will want.

Waddel & Walters.

A new shaft was sunk in the Bennett shaft, from the upper to the lower split of the Baltimore vein, to a depth of two hundred feet. Size of slope, 6×18. Gradient of fifteen degrees. Likewise, a new gravity plane was driven in the lower split, three hundred feet, with a sectional area of 6×18, and a gradient of twelve degrees, which will open up some good coal, and enlarge the company's shipment from this colliery.

Florence Coal Company.

A new breaker has been built on the site of the old breaker, which was burned down August 1, 1884. It is supplied with first-class machinery for cleaning and preparing coal. They started the breaker May 1, 1885. It has a capacity of eight hundred tons per day.

TABLE I.—*Showing location of collieries in the Second Anthracite Mine District.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Post-Office Address.
Bernice,	State Line and Sullivan Railroad Company,	Sullivan county,	J. O. Blight,	Towanda, Bradford county.
Bennett,	Thomas Waddel & Walters,	Plains township,	Thomas Waddel,	Pittston, Luzerne county.
Black Diamond,	Haddock & Steel,	Kingston township,	James B. Davis,	Plymouth, Luzerne county.
Butler,	Dimming & Cowan,	Pittston township,	F. C. Dimming, Jr.,	Pittston, Luzerne county.
Boston,	do.	Jenkins township,	do.	do. do.
Barnum, two shafts,	Pennsylvania Coal Company,	Marcy township,	John B. Smith,	Hawley, Wayne county.
Breaker, No. 6, three shafts,	do. do.	Jenkins township,	do.	do. do.
Breaker, No. 8, two shafts,	do. do.	Hughestown borough,	do.	do. do.
Breaker, No. 10, three shafts,	do. do.	do. do.	do.	do. do.
Clear Spring,	Clear Spring Coal Company,	West Pittston,	John L. Cake,	Pittston, Luzerne county.
Consolidated,	Hillside Coal Company,	Pleasant Valley,	W. A. May,	Scranton, Lackawanna county.
Columbia,	Grove Brothers,	Marcy township,	Abandoned.	
Elmwood,	Florence Coal Company,	Pittston township,	Austin Moore,	Avoca, Luzerne county.
Enterprise,	A. Langdon,	Plains township,	C. D. Simpson,	Scranton, Lackawanna county.
East Boston,	W. G. Payne,	Kingston township,	E. F. Payne,	Kingston, Luzerne county.
Exeter,	Lehigh Valley Coal Company,	West Pittston,	Fred. Mercur,	Wilkes-Barre, Luzerne county.
Fuller,	Delaware, Lackawanna and Western Railroad Co.	Wyoming,	W. R. Storrs,	Scranton, Lackawanna county.
Forty Fort,	Wyoming Valley Coal Company,	Kingston township,	J. H. Swoyer,	Wilkes-Barre, Luzerne county.
Hillman,	H. Baker Hillman,	Miner's Mills borough,	H. B. Hillman,	do. do.
Henry,	Lehigh Valley Coal Company,	Plains township,	Fred. Mercur,	do. do.
Harry E.,	Wyoming Valley Coal Company,	Kingston township,	J. H. Swoyer,	do. do.
Halstead,	Delaware, Lackawanna and Western Railroad Co.	Marcy township,	W. R. Storrs,	Scranton, Lackawanna county.
Heidelberg,	Lehigh Valley Coal Company,	Pittston township,	Fred. Mercur,	Wilkes-Barre, Luzerne county.
Laurel Run,	Delaware and Hudson Canal Company,	Parsons borough,	A. H. Vandling,	Scranton, Lackawanna county.
Law's Shaft,	Pennsylvania Coal Company,	Pittston township,	John B. Smith,	Hawley, Wayne county.
Midvale,	Lehigh Valley Coal Company,	Plains township,	Fred. Mercur,	Wilkes-Barre, Luzerne county.
Mineral Spring,	do. do.	Parsons borough,	do.	do. do.
Mill Creek,	Delaware and Hudson Canal Company,	Plains township,	A. H. Vandling,	Scranton, Lackawanna county.
Maltby,	Lehigh Valley Coal Company,	Wyoming,	Fred. Mercur,	Wilkes-Barre, Luzerne county.
Mosier,	Butler Coal Company,	Hughestown borough,	F. C. Dimming, Jr.,	Pittston, Luzerne county.
Ontario,	Lehigh Valley Coal Company,	Pleasant Valley,	Fred. Mercur,	Wilkes-Barre, Luzerne county.
Prospect,	do. do.	Plains township,	do.	do. do.
Pine Ridge,	Delaware and Hudson Canal Company,	Miner's Mills borough,	A. H. Vandling,	Scranton, Lackawanna county.
Raubville.	Thomas Waddel,	Luzerne borough,	James Waddel,	Wilkes-Barre, Luzerne county.
Shaft, No. 4,	Pennsylvania Coal Company,	Pittston borough,	John B. Smith,	Hawley, Wayne county.
Shaft, No. 7,	do. do.	Jenkins township,	do.	do. do.
Shaft, No. 11,	do. do.	do.	do.	do. do.
Slope, No. 2,	do. do.	do.	do.	do. do.
Slope, No. 4, and Tunnel,	do. do.	do.	do.	do. do.
Schooley,	Butler Coal Company,	Wyoming,	F. C. Dimming, Jr.,	Pittston, Luzerne county.
Tunnel, No. 1,	Pennsylvania Coal Company,	Pittston township,	John B Smith,	Hawley, Wayne county.
Twin,	Butler Coal Company,	Pittston borough,	F. C. Dimming, Jr.,	Pittston, Luzerne county.
Wyoming,	Lehigh Valley Coal Company,	Plains township,	Fred. Mercur,	Wilkes-Barre, Luzerne county.

TABLE II.—*Showing Character of Coal, Production, Number of Employés, Days Employed, Casualties, &c., in the Second Anthracite Mine District, for the year ending December 31, 1885.*

COLLIERIES.	Operators.	Character of Coal, Anthracite or Semi-Anthracite—Bituminous or Semi-Bituminous.	Drift, slope, or shaft.	Number of inside workmen.	Number of outside workmen.	Total employees.	Number of days worked inside.	Number of days worked outside.	Number of horses and mules.	PRODUCTION.		CASUALTIES.				
										Number of tons produced.	Number of tons shipped.	Killed inside.	Killed outside.	Injured inside.	Injured outside.	Total killed and injured.
Bernice,	State Line and Sul. R. R. Co.,	Semi-anthracite,	2 Drifts,	145	91	236	198.75	198.75	36	119,612.00	73,117.02	1	. .	. .	. .	1
Bennett,	Waddel & Walters,	Anthracite,	Shaft,	171	90	261	254.75	254.75	18	97,538.00	94,350.15	. .	. .	. .	. .	. .
Black Diamond,	Haddock & Steel,	do.	do.	211	95	306	151.30	151.30	30	104,030.00	92,942.00	1	. .	2	. .	3
Butler,	Butler Coal Company,	do.	S. & T.,	88	53	141	153.00	153.00	17	36,496.05	31,411.12	. .	. .	. .	. .	. .
Boston,	do. do.	do.	S. & 2T.,	121	70	191	130.00	130.00	24	30,131.16	29,634.07	. .	. .	. .	. .	. .
Clear Spring,	Clear Spring Coal Company,	do.	Shaft,	250	84	334	166.00	166.00	28	136,256.00	129,934.00	. .	. .	1	. .	1
Consolidated,	Hillside Coal Company,	do.	Sh. & S.,	237	88	325	210.25	210.25	34	111,271.00	110,161.00	. .	. .	1	. .	1
Enterprise,	A. Langdon,	do.	Shaft,	157	56	213	100.40	100.40	39	40,679.00	37,049.00	. .	. .	1	. .	1
East Boston,	W. G. Payne & Co.,	do.	do.	194	73	267	160.40	160.40	31	114,191.00	112,871.00	. .	. .	. .	. .	. .
Elmwood,	Florence Coal Company,	do.	do.	123	79	202	169.00	169.00	21	52,996.00	52,635.00	. .	. .	. .	. .	. .
Exeter,	Lehigh Valley Coal Company,	do.	do.	219	117	336	6.90	6.90	54	15,822.00	14,386.00	. .	. .	. .	. .	. .
Forty Fort,	Wyoming Valley Coal Company,	do.	Sh. & T.,	255	23	278	248.40	248.40	24	118,350.00	109,600.00	1	. .	. .	. .	1
Fuller,	Del., Lacka. and West R. R. Co.,	do.	Shaft,	114	69	183	203.60	203.60	31	33,973.07	30,518.07	. .	. .	. .	. .	. .
Henry,	Lehigh Valley Coal Company,	do.	do.	285	101	386	193.90	193.90	53	168,993.00	158,476.00	. .	. .	. .	. .	. .
Harry E.,	Wyoming Valley Coal Company,	do.	Drift,	147	154	301	252.70	252.70	22	90,400.00	78,000.00	. .	. .	. .	. .	. .
Heidelberg,	Lehigh Valley Coal Company,	do.	Sh. & 2S.,	145	108	253	200.00	200.00	25	79,038.00	78,605.02	. .	. .	1	. .	1
Halstead,	Del., Lacka. and West. R. R. Co.,	do.	Shaft,	304	139	443	168.40	168.40	50	146,508.00	141,199.18	. .	. .	. .	. .	. .
Hillman,	H. B. Hillman,	do.	Slope,	48	30	78	197.00	197.00	13	44,800.00	43,000.00	. .	. .	. .	. .	. .
Laurel Run,	Delaware and Hudson Canal Co.,	do.	do.	218	139	357	186.75	186.75	42	111,386.00	111,386.00	. .	. .	. .	. .	. .
Laws,	Pennsylvania Coal Company,	do.	Shaft,	134	98	232	235.00	235.00	25	97,499.00	97,499.00	. .	. .	1	. .	1
Mineral Spring,	Lehigh Valley Coal Company,	do.	Slope,	133	105	238	149.75	149.75	20	62,762.19	56,342.19	. .	. .	. .	. .	. .
Mill Creek,	Delaware and Hudson Canal Co.,	do.	do.	237	137	374	207.75	207.75	38	169,212.00	169,212.00	3	. .	6	. .	9
Mosier,	Butler Coal Company,	do.	Sh. & S.,	151	88	239	202.00	202.00	24	78,513.06	77,230.00	. .	. .	. .	. .	. .
*Midvale,	Lehigh Valley Coal Company,	do.	Slope,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. .	. .	. .	. .	. .
*Maltby,	do. do. do.	do.	Shaft,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. .	. .	. .	. .	. .
Pine Ridge,	Delaware and Hudson Canal Co.,	do.	do.	242	141	383	199.50	199.50	48	137,289.00	134,707.00	. .	. .	. .	. .	. .
Prospect,	Lehigh Valley Coal Company,	do.	2 Shafts,	423	197	620	205.50	205.50	70	303,388.16	303,242.05	. .	. .	4	. .	4
†Petlibone,	Del., Lacka. and West. R. R. Co.,	do.	Shaft,	27	25	52	. . .	. . .	—	. . .	. . .	. .	. .	. .	. .	. .
Raubville,	Thomas Waddel,	do.	Sh. & D.,	126	64	190	199.00	199.00	12	68,000.00	60,000.00	. .	. .	1	. .	1
Schooley,	Butler Coal Company,	do.	Shaft,	148	85	233	186.00	186.00	31	154,871.00	149,581.00	. .	. .	1	. .	1
Shafts, Nos. 1 and 2,	Pennsylvania Coal Company,	do.	2 Shafts,	365	126	491	215.50	215.50	51	215,079.00	215,079.00	. .	. .	. .	. .	. .
Shafts, Nos. 1 and 8,	do. do.	do.	do.	208	86	294	176.75	176.75	31	97,005.00	97,005.00	. .	. .	. .	. .	. .
Shaft, No. 7,	do. do.	do.	Shaft,	143	29	172	193.00	193.00	22	79,021.00	79,021.00	. .	. .	1	. .	1

Shafts, Nos. 5, 6, and 11,	do.	do.	do.	3 Shafts,	288	140	428	189.50	189.50	59	150,386.00	150,386.00	1	. .	. .	. .	1
Shafts, Nos. 9 and 10,	do.	do.	do.	2 Shafts,	365	133	498	210.00	210.00	60	213,390.00	213,390.00	. .	. .	. .	. .	. .
†Shaft, No. 14,	do.	do.	do.	Shaft,	. . .	. . .	. . .	. . . .	. . . .	. .	. . . . .	. . . . .	. .	. .	. .	. .	. .
Shaft, No. 4,	do.	do.	do.	do.	137	21	158	174.00	174.00	16	59,436.00	59,436.00	. .	1	. .	. .	1
Slope, No. 2,	do.	do.	do.	Slope,	97	18	115	190.50	190.50	17	44,291.00	44,291.00	. .	. .	. .	. .	. .
Slope, No. 4,	do.	do.	do.	do.	129	27	156	174.00	174.00	28	57,902.00	57,902.00	1	. .	. .	. .	1
Tunnel, No. 1,	do.	do.	do.	S. & T.,	92	18	110	170.75	170.75	16	39,219.00	39,219.00	. .	. .	. .	. .	. .
Twin,	Butler Coal Company,		do.	Shaft,	89	51	143	87.50	87.50	22	20,646.00	19,525.18	. .	. .	. .	. .	. .
Wyoming,	Lehigh Valley Coal Company,		do.	do.	311	128	439	168.80	168.80	52	181,519.00	174,598.00	. .	. .	1	. .	1
Grand totals,					7,277	3,379	10,656	176	176	1,241	3,881,902.00	3,726,924.00	8	1	21	. .	30

*Did not work in 1885.

†Not shipping coal yet.

TABLE No. III.—*Showing state of Ventilation in all the Collieries operated in the Second District of Luzerne and Sullivan counties, for the year ending December 31, 1885.*

Name of Collieries.	Power by which the ventilation is produced.	Revolutions per minute per fan.	Total cubic feet of air per minute at inlet.	Cubic Feet of Air per Minute Passing near the Face in each Split.							Total cubic feet of air per minute passing near the face.
				No. 1.	No. 2.	No. 3.	No. 4	No. 5.	No 6.	No. 7.	
1. Bernice Drifts,	Furnace,		26,500	6,840	3,660	10,425					20,925
2. Bennett Shaft,	Fan,	65	29,340	7,240	10,105						17,345
3. Black Diamond Shaft,	Fan,	50	50,600	11,000	25,000						36,000
4. Butler Shaft,	Natural,		19,200	16,800							16,800
5. Boston Slope,	Furnace,		35,400	6,000	12,600						18,600
6. Barnum Shaft,	Fan,	50	71,740	21,100	11,475	14,800	13,500				60,875
7. Clear Spring Shaft,	Fan,	65	59,300	10,000	11,000	11,000	12,000				44,000
8. Consolidated Shaft,	Fan,	110	31,990	13,990	13,700						27,690
9. Consolidated Slope,	Furnace,		11,600	5,800							5,800
10. Enterprise Shaft,	Fan,	49	67,700	5,600	5,500						11,100
11. East Boston Shaft,	Fan,	40	96,800	24,750	14,350	25,100	10,200				74,400
12. Elmwood Shaft,	Fan,	50	46,250	19,100	16,800						35,900
13. Exeter Shaft.*	Fan.										
14. Forty Fort Shaft,	Fan,	74	30,000	7,500	8,200						15,700
15. Fuller Shaft,	Fan,	50	53,850	26,600	16,750						43,350
16. Henry Shaft,	Fan,	75	133,900	18,610	17,530	13,880	8,000	7,390	6,500	14,520	86,430
17. Harry E., Ross Tunnel,	Natural,		12,000	9,000							9,000
18. Harry E., Baby Slope,	Fan,	50	31,700	29,600							29,600
19. Heidelberg Shaft,	Fan,	50	35,880	27,640							27,640
20. Heidelberg Slope,	Fan,	225	16,330	12,260							12,260
21. Halstead Shaft,	Fan,	135	93,762	25,950	8,625	20,218	10,932	12,645	7,120		85,490
22. Hillman's Slope,	Fan,	70	3,500	3,000							3,000
23. Laurel Run Slope,	Two fans,	83	147,351	15,983	16,235	29,335	11,215	9,020	10,655		92,463
24. Law's Shaft,	Fan,	70	59,640	12,800	9,600	10,960	10,800				44,160
25. Oakwood Shaft,	Fan,	45	143,438	27,215	10,487	9,389	9,817	11,658	5,838	26,145	100,549
26. Mineral Spring Slope,	Fan,	70	75,000	11,000	12,500	3,000					26,500
27. Mill Creek Slope,	Fan,	43	130,500	12,915	10,000	13,700	15,700	13,500	21,900	26,790	114,535
28. Mosier Shaft,	Natural,		15,600	15,300							15,300
29. Mosier Slope,	Fan,	65	43,650	22,050	21,600						43,650
30. Midvale Slope,	Fan,	41	48,953	8,541	8,596	5,518	9,657	9,876			42,188
31. Maltby Shaft,	Fan.										
32. Ontario Slope,	Natural,		16,390	14,165							14,165
33. Pine Ridge Shaft,	Fan,	88	59,595	22,735	21,320	10,040					54,095
34. Prospect Shaft,	Fan,	47	146,261	15,405	19,452	18,577	14,900	17,750	20,892	22,215	129,221
35. Pettibone Shaft.											
36. Raubville Shaft,	Fan,	60	30,215	10,200	8,350						18,550
37. Schooley Shaft,	Fan,	60	95,400	45,800	44,800						90,600

38. Shaft, No. 1, Barnum,	Fan,	50	71,740	21,100	11,475	14,800	13,500				60,875
39. Shaft, No. 2, Barnum,	Fan,	50	30,130	9,500	10,640	8,000					28,140
40. Shaft, No. 2, Barnum, 14-foot vein,	Fan,	50	52,330	20,880	7,800	13,000	10,000				51,680
41. Shaft, No. 1, Breaker 8,	Fan,	54	23,760	12,000	10,500						22,500
42. Shaft, No. 8, Breaker 8,	Fan,	54	34,200	15,200	14,500						29,500
43. Shaft, No. 7,	Fan,	84	40,851	10,540	19,850	2,150	4,030				36,570
44. Shaft, No. 6, Breaker 6,	Natural,		25,000	2,500	10,000	10,000					22,500
45. Shaft, No. 5, Breaker 6,	Fan,	65	35,040	13,000	5,300	5,160	13,800				37,260
46. Shaft, No. 11, Breaker 6,	Fan,	60	33,760	7,100	8,300	11,600					27,000
47. Shaft, No. 9, Breaker 10,	Fan,	54	59,800	14,100	15,100	16,000					45,200
48. Shaft, No. 10, Breaker 10,	Fan,	68	58,200	13,800	15,300	16,400	17,600	14,200	15,700		93,200
49. Shaft, No. 4,	Fan,	62	26,200	6,900	5,000	10,600					22,500
50. Slope, No. 2,	Steam,		30,725	18,000	16,345						34,345
51. Slope, No. 4,	Fan,		13,300	9,780	10,800						20,580
52. Tunnel, No. 1,	Steam,		26,900	9,600	9,200	8,650					27,450
53. Twin Shaft,	Fan,	56	39,200	13,500	10,800						24,300
54. Wyoming Shaft,	Fan,	48	154,710	37,100	34,750	12,100	26,700	28,300			138,950

* Only worked one week this year.

TABLE IV.—LIST OF ACCIDENTS *occurring in the mines of the Second Anthracite Coal District, for the year ending December 31, 1885.*

Date of accident.	Name of Persons Killed.	Age.	Married or single	No. of orphans.	Name of Colliery.	Location—County.	Nationality.	Occupation.	Nature and Cause of Accident in Brief.
Nov. 5	Patrick Golden,	17	. .	. .	Slope, No. 4,	Pittston, Luzerne county,	Irish, . .	Driver, . .	Fell under cars while coming out with trip.
19	Patrick Coolican,	35	. .	. .	Shaft, No. 4,	do. do.	do. . .	Laborer, .	Squeezed between gravity cars at outside chutes.
28	Laurance Murry,	35	1	5	Forty Fort,	Wyoming, Luzerne county,	do. . .	Miner, . .	Fell down shaft, breaking his back; died Dec. 17.
Dec. 1	Michael Flaherty,	50	1	. .	Shaft, No. 6,	Pittston, Luzerne county,	do. . .	do. . .	Instantly killed by fall of coal and rock from side of entrance.
4	Lawrence Crogan,	50	1	4	Black Diamond Shaft,	Luzerne boro., Luzerne co.	do. . .	do. . .	Instantly killed while going to stand a prop.
14	George Martin,	68	1	. .	Mill Creek Slope,	Plains twp., Luzerne co.,	English, .	Fire-boss,	Fatally injured by explosion of fire-damp; died Dec. 15.
14	Joseph Cleasby,	34	. .	. .	do.	do. do.	do. .	do.	
14	Peter Stone,	34	1	3	do.	do. do.	Polish, . .	Laborer, .	
April 7	Robert Jeffery,	27	. .	. .	Jackson Drift,	Bernice, Sullivan county,	. . . . .	Water bai'r	Instantly killed by having his head caught between cars.
	Name of Persons Seriously Injured:								
Nov. 9	John Early,	46	. .	. .	Shaft, No. 7,	Pittston, Luzerne county,	Irish, . .	Miner, . .	Knee bruised by rock falling on it.
11	Hugh Corcoran,	17	. .	. .	Enterprise Shaft,	Plains, Luzerne county, .	do. . .	Driver, . .	Squeezed between mule and prop.
11	David Bram,	21	. .	. .	Schooley Shaft,	Wyoming, Luzerne county,	do. . .	Car runner	Collar bone and rib broken; run over by cars.
14	James Galvin,	16	. .	. .	Wyoming Shaft,	Plains, Luzerne county, .	do. . .	Door boy,	Struck under chin with rope on gravity plane.
19	Job Tilly,	15	. .	. .	Mill Creek Slope,	do. do. .	English, .	Driver, . .	Kicked in face by a mule.
27	James Calderwood,	38	. .	. .	Law's Shaft,	Pittston, Luzerne county,	Scotch, . .	Miner, . .	Arm broken by premature blast.
30	Joseph Howarth,	39	. .	. .	Prospect Shaft,	Plains, Luzerne county, .	English, .	Engineer,	Finger crushed by head of cyliuder.
Dec. 10	John Moliston,	35	. .	. .	Mill Creek Slope,	do. do. .	Polish, . .	Laborer, .	Leg amputated; crushed by fall of coal.
10	John Smith,	45	. .	. .	Clear Spring Shaft,	West Pittston, Luzerne co.	English, .	Miner, . .	Burned by explosion of gas.
14	Peter Coffey,	42	. .	. .	Mill Creek Slope,	Plains, Luzerne county, .	Irish, . .	do. . .	
21	John Kivolskie,	16	. .	. .	Prospect Shaft,	do. do. .	Hungarian,	Driver, . .	Arm dislocated at shoulder; fell under cars.
	Persons Slightly Injured:								
Nov. 7	Thomas Lamb,	35	. .	. .	Black Diamond Shaft,	Kingston, Luzerne county,	Irish, . .	Miner, . .	Slightly burned by explosion of fire-damp.
7	James Burns,	30	. .	. .	do. do.	do. do.	do. . .	Laborer, .	
9	Thomas Parry,	25	. .	. .	Prospect Shaft,	Plains, Luzerne county, .	Welsh, . .	Miner, . .	
24	Solomon Jermyn,	45	. .	. .	Consolidated Slope,	Pleasant Valley, Luzerne co	do. . .	do. . .	Back bruised by fall of coal.
Dec. 3	Edward E. Davis,	44	. .	. .	Ontario Slope,	do. do.	Irish, . .	do. . .	Leg bruised by fall of coal.
11	Lawrence Craston,	30	. .	. .	Raubville Shaft,	Luzerne boro., Luzerne co.	English, .	do. . .	Back bruised by fall of coal.
14	Samuel Morris,	24	. .	. .	Mill Creek Slope,	Plains, Luzerne county, .	do. .	Laborer, .	Slightly burned by explosion of gas.
14	Nicholas Gray,	16	. .	. .	do.	do. do. .	do. .	Driver, . .	Slightly injured by concussion of explosion of gas.
14	Joseph Parduski,	15	. .	. .	do.	do. do. .	Polish, . .	Door boy,	
23	Joseph Schimsick,	20	. .	. .	Prospect Shaft,	do. do. .	Hungarian,	Laborer, .	Slightly bruised on shoulder while passing between cars.

TABLE V.—*Showing the grand total of employés, horses, mules, engines, pumps, boilers, and powder employed, tons of coal mined and shipped, fatal and non-fatal accidents, &c, in the Second Anthracite Mine District, for the year ending December 31, 1885.*

NAME OF COUNTIES AND PARTS OF COUNTIES IN THE DISTRICT.	Total number of men employed.	Total number of boys employed	Total number of horses and mules employed.	Total number of engines and pumps employed.	Total number of boilers employed.	Total number of kegs of powder consumed.	Total number of tons of coal produced.	Total number of tons of coal shipped.	Total number of fatal accidents.	Total number of non-fatal accidents.	Total number of times air measurements were taken.
Pennsylvania Coal Company, Luzerne county,	1,966	688	325	92	115	34,337	1,053,228.00	1,053,228.00	3	2	.....
Lehigh Valley Coal Company, Luzerne county,	1,528	744	274	93	130	24,498	811,520.00	785,630.15	.....	6	.....
Delaware, Lackawanna and Western Railroad Company, Luzerne county,	508	170	88	32	35	6,435	180,482.00	171,717.00	.....	.....	.....
Delaware and Hudson Canal Company, Luzerne county,	660	454	128	47	56	13,486	417,887.00	415,305.00	3	6	.....
Butler Coal Company, Luzerne county,	605	342	118	28	47	11,824	320,659.00	307,384.00	.....	1	.....
Wyoming Valley Coal Company,	454	125	46	21	26	8,350	208,750.00	187,600.00	1	.....	.....
State Line and Sullivan Railroad Company, Sullivan county,	153	83	36	1	1	974	119,613.00	73,117.00	1	.....	.....
Miscellaneous coal companies, Luzerne county,	1,505	671	226	85	109	27,449	769,763.09	732,943.00	1	6	.....
Total, all companies,	7,379	3,277	1,241	399	519	127,353	3,881,902.09	3,726,923.05	9	21	.....

THIRD DISTRICT.

OFFICE OF INSPECTOR OF MINES,
THIRD DISTRICT ANTHRACITE COAL FIELDS,
WILKES-BARRE, PA., *March 17, 1886.*

Honorable J. SIMPSON AFRICA,
Secretary of Internal Affairs of Pennsylvania:

SIR: As provided in section seven, article two, of the act of June 30, 1885, providing for the health and safety of persons employed in and about the anthracite coal mines, I have the honor of presenting my report for the year 1885.

The creation of an additional inspection district by this act reduced the number of collieries in this district from sixty-three to forty-two; but, having no inspector appointed for the Second or new district until the end of October, a list of the fatal and non-fatal accidents for the twenty-one collieries formerly in this district is found in my report up to October 31, when Mr. McDonald was appointed inspector for the Second district.

The amount of coal mined in 1885 was 6,177,644 tons, an increase of 442,223 tons over the amount mined in the same portion of the district in 1884.

The number of fatal accidents was 89, leaving 46 widows and 145 orphans.

The number of non-fatal accidents was 285, but only 178 of which were classed as being serious.

The report contains lists of the fatal and non-fatal accidents, tables of useful statistics, and other information thought to be useful.

Three very serious disasters happened in this district during 1885—the first at the West End colliery, August 11, where ten men lost their lives by suffocation; the second at the No. 2 shaft, Plymouth, where sixteen men were seriously burned by an explosion of gas on October 21, six of whom died; and the third was the disaster in the No. 1 slope, Nanticoke, December 18, where twenty-six persons were entombed by an inrush of quicksand. A full account of each will be found in this report, which is respectfully submitted.

G. M. WILLIAMS,
Inspector of Mines, Third District.

Total Amount of Coal Mined during the year 1885.

Lehigh and Wilkes-Barre Coal Company,	1,710,539.15 tons.
Delaware and Hudson Canal Company,	867,596.02 tons.
Susquehanna Coal Company,	1,466,736.17 tons.
Kingston Coal Company,	659,793.19 tons.
Miscellaneous coal companies,	1,472,978.01 tons.
Total of all coal companies,	6,177,644.13 tons.

Number of Fatal Accidents and Amount of Coal Produced per Life Lost.

NAMES OF THE COMPANIES.	Number of lives lost.	Coal mined per life lost—tons.
Lehigh and Wilkes-Barre Coal Company,	11	155,500
Delaware and Hudson Canal Company,	9	96,399
Susquehanna Coal Company,	45	32,594
Kingston Coal Company,	1	659,793
Miscellaneous coal companies,	20	73,648
Totals,	86	71,833

There were three persons killed in shafts not producing coal, which are not included in the above table.

Classification of Fatal and Serious Non-Fatal Accidents.

CAUSES OF ACCIDENTS.	Killed.	Seriously injured.
By explosions of carbureted hydrogen gas,	11	52
By falls of roof and coal,	17	38
By falling down shafts,	4	1
By cars underground,	6	26
By explosions of powder and blasts,	6	20
Miscellaneous causes, inside,	39	20
Miscellaneous causes, outside,	6	21
Totals,	89	178

Number of widows, forty-six; orphans, one hundred and forty-five.

Number of Employees, Average Number of Days Worked and Tons of Coal Mined per Day.

NAMES OF THE COMPANIES.	Number of persons employed.	Average number of days in operation.	Tons of coal mined per day.
Lehigh and Wilkes-Barre Coal Company, . . .	6,599	169.30	10,103
Delaware and Hudson Canal Company, . .	2,636	156.62	5,539
Susquehanna Coal Company, ...	3,920	259.05	5,661
Kingston Coal Company, ...	1,553	202.45	3,259
Miscellaneous coal companies, ...	4,365	187.08	7,873
Totals, ...	19,073	194.90	31,696

Condition of the Mines.

The year 1885 was a remarkable one for its number of serious and fatal disasters, but, notwithstanding the large increase of such casualties, the condition of the mines is generally better and safer than it was in former years. With increase of technical knowledge of the theory and practice of mining and a wide range of experience in practice, a gradual improvement takes place continually, and this improved condition in the management of mines will be permanent, for there is no probability of retrograding to old methods. The deplorable calamity which occurred at the No. 1 slope, Nanticoke, arose from the unknown condition of the strata overlying the vein, in which great danger lurked unsuspected by any one. The system of mining was good and safe, and the accident was not the result of any wrong in the mine. The ventilation was good, and so it is in nearly all the mines of this district. There are one or two collieries, owing to peculiar circumstances, in which there is not quite enough air, and in others too many persons are employed in each split; but the attention of the officers has been called to that by the inspector and they promise to remedy the matter as soon as it is practicable to do so.

The new law has had good effect already in causing the main gangways to be kept clear of *débris*. The loose material left to lie along the side of gangways in some of the mines was dangerous, and caused the drivers to fall under the cars frequently, and it is very gratifying to see that the requirement of the law in this respect is very generally complied with.

A hearty coöperation with all the provisions of the new law will certainly produce good effect, and will materially increase the safety of the work of mining coal. In many mines it has been a very difficult work to get the miners to observe the law regarding the handling of powder, and

to keep the boxes containing powder locked; but, by continued practice, they will gradually get into the habit of doing so, and then there will be no further difficulty. It is much harder to maintain discipline and to keep the mines in good condition when they work only about half time than when they are working nearly full time. During a long interval of idleness, everything gets out of order, and, upon starting to work again, much more care is needed on the part of all to insure safety. With steady work I do not think there would be much reason to complain of the condition of the mines of this district.

New Collieries Started to Ship Coal in 1885.

The Newport colliery, or No. 6 of the Susquehanna Coal Company, is the only new one started during 1885. It is located about four miles west of Nanticoke, and with it the village of Morgantown sprung into existence. There are three openings made to produce coal—a shaft, a slope, and a tunnel. The size of the shaft is 32×15 feet, and its depth is 749 feet, having passed through several coal seams. The slope is sunk on one of the seams, on a grade of 45 degrees, having a sectional area of 11×18 feet, and in to a depth of 510 feet. The tunnel was driven horizontally from the surface into the mountain side to a distance of 1,265 feet, and has cut several coal seams. Its area is 8×14 feet. These openings are ventilated by three fans, one at each place. The tunnel and slope fans are each 20 feet diameter, and the shaft fan (which is only a temporary one) is 16 feet diameter. The coal from the three mines is prepared for the market by passing it through one large breaker. This was started August 17, 1885, but there was not much coal shipped till about the middle of September, and from that to the end of the year they shipped a total of 40,943 tons. This will eventually be one of the largest collieries in this district. There are four pairs of hoisting engines—two pairs and one single engine—to run the fans; one breaker engine and two pumps, and there are sixty boilers to produce steam. Everything is constructed in the best order, which speaks well of the persons who have it in charge.

Colliery Improvements during 1885.

The spirit of improvement was not so active in 1885 as it was in the years preceding it. The depression in the coal trade caused several collieries to be thrown idle, and those kept in operation, excepting those of the Susquehanna Coal Company, worked only a little over half time throughout the whole year. The No. 10 colliery of the Lehigh and Wilkes-Barre Coal Company did not work any, and the Baltimore tunnel and No. 2 collieries of the Delaware and Hudson Canal Company were idle, the former for the first nine months, and the latter for the first ten months of the year. Thus it is shown that more than enough collieries are already opened to produce the coal required by the market; yet, in order to maintain the producing capacity, some improvements were made, and also improvements for the ventilation were effected.

Lehigh and Wilkes-Barre Coal Company.

At the Empire colliery of this company a new fan was erected on the No. 2 shaft, which is 24 feet diameter, and produces a ventilation of 145,000 cubic feet of air per minute, running 70 revolutions per minute. A tunnel was also driven, for the purpose of ventilation and haulage, from the bottom to the top split of the Baltimore seam. It is 100 feet long and has a sectional area of 84 square feet. The South Wilkes-Barre shaft is continually sinking, and is now at a depth of 500 feet. The arrangement of the head of this shaft is very good; is heated by steam so that no ice forms in winter, and is thus kept in much safer condition than if ice was formed.

Delaware and Hudson Canal Company.

One of the new shafts at the Baltimore slope is sunk from the surface to the Red Ash seam, where it is found at a depth of 400 feet. The coal is fair and about 10 feet thick. They are now driving toward the other shaft, which will soon be sunk to the same vein, and by which a second opening will be effected.

Susquehanna Coal Company.

A number of improvements, such as tunnels and planes, were made in the mines of this company. In No. 4 slope two planes were made; one is 500 feet long, and the other 800 feet. These will facilitate the haulage of coal, and also enable them to mine coal which could not be reached otherwise. The slope was also extended a distance of 1,060 feet.

In the No. 1 slope a tunnel was driven from the Red Ash to the Ross and Twin veins. It is 9×14 feet area, and has a length of 1,150 feet.

Kingston Coal Company.

At the No. 4 shaft, this company erected a new breaker, which is nearly completed. It is a very large structure, built with a view of preparing the coal of the Ross and Red Ash seams. It will be heated throughout by steam, a new feature in coal-breakers, and for this purpose seven thousand feet of wrought-iron pipe were used in making the heating apparatus. It will be ready to ship coal early in 1886.

A new fan was erected on the No. 4 shaft. It is 24 feet diameter and running 60 revolutions per minute, gives a water gauge pressure of 1.10 inches and 14,000 cubic feet of air. The engine is horizontal, direct-acting, and the cylinder is 18-inch diameter.

Hillman Vein Coal Company.

At the Hillman shaft of this company a new upcast was made having an area of 150 square feet, and a new 24-foot fan was erected upon it. This fan, running 75 revolutions per minute, produces a pressure equal to 1.75 inches water-gauge and a ventilation of 180,000 cubic feet per minute of air. The engine is 15×24 inches and is direct acting. They are driving

ments. from the Hillman toward the Kidney vein, which at the close of the year was driven a distance of 250 feet. Its size is 12×7.

The Hanover Coal Company.

At the Maffit colliery of this company a tunnel was driven from the Ross to the bottom split of the Baltimore seam. Its sectional area is 7×12 feet and its length 200 feet. A second opening was effected, and the new seam is now being mined. A tunnel is in progress also from the Ross to the Red Ash seam, which will open a long lift of that vein.

The Parrish Coal Company.

A twenty-foot fan was erected at this colliery, which improved the ventilation to a great extent. Running 32 revolutions, it produces a ventilation of 75,000 cubic feet of air per minute. They are sinking a slope at this mine also to work the Baltimore seam.

Fire in the Dorrance Colliery.

This colliery belongs to the Lehigh Valley Coal Company and is located in the northern end of Wilkes-Barre. Late on Saturday evening, June 13, 1885, while the night shift were at work sinking the underground slope, the gas-blowers ignited from a miner's lamp. It very soon spread, and set the brattice and timber on fire, to such an extent that in spite of the most strenuous efforts they failed to extinguish it by the ordinary means and it was concluded to flood the mine with water. Water was pumped in from the river. While it was filling, a considerable quantity of smoke was ascending both shafts. By July 2, the mine had filled with water to a point sixty feet vertically higher than where the fire existed, and, believing it was extinguished, they began to hoist the water out. By July 12, the water was lowered to within two feet of the bottom of the gangway, when, to every one's surprise, four explosions took place, showing that fire still existed. The water was poured in again until the air-passages on the east side, where the fire existed, were closed. Then an examination revealed the fact that fire existed in the air-way at a point where it was much higher than the surrounding entrances, and they at once went to work to lay pipe from this high point out so that the air and gases could escape while the water was filling. This was a very dangerous work, because it had to be done in very noxious gases, consequently it was slow and tedious. By August 1, this was completed and water was poured in again. The air escaped all right for a day or two, but the heat caused steam to rise, saturating the air, and this again condensing in the pipe, soon filled the lowest point with water and made it useless. After leaving the water stand awhile, it was pumped out until it lowered so that the east air-way could be entered, and an examination proved that the fire was extinguished. After pumping the water all out, it was seen that the fire had spread over considerable ground and had done material damage, but this in time was re-

paired and the mine started to ship coal again in the fore part [illegible] ber. At this fire it was demonstrated very clearly that a pipe is [illegible] use to permit air to escape from high points during a fire if water can stand in the pipe. It had a fair trial here and it failed.

A Powerful Explosion of Gas at the Stanton Colliery, Lehigh and Wilkes-Barre Coal Company.

The Stanton Shaft is located in Wilkes Barre, about a mile south of the center of the city. The air-shaft is on the side of Hazle street, about two thousand feet north-west of the main shaft. The old workings are ventilated by a fan, located at the mouth of a slope sunk from the outcrop of the Baltimore seam, and the workings now in progress are ventilated by a thirty-five-foot fan, located at the air-shaft, which is divided into two compartments, one a downcast, and the other an upcast. The boilers generating steam to run this fan were near the top of the shaft, and the stack, made of boiler-plate iron, was standing just one hundred feet off, south-east of the outcast of the fan, and it was thirty feet high. On Sunday afternoon, May 10, 1885, this fan was stopped to pack the engine and do some repairs. Prior to this the mine was examined twice, to ascertain that no gas-blowers were burning, and it was pronounced safe. In one hour after stopping the fan, the explosive gases were full in the mine, up to the top of the shaft. It exploded in the safety-lamp on the surface at the mouth of the shaft, and a fire-boss was stationed there to watch and keep persons away, lest it might be carelessly fired. The fan was standing for three hours, and it was started again at six o'clock, P. M. After running about five minutes, throwing out about one hundred and fifty thousand cubic feet of fire-damp every minute, a flame was seen in the air, between the fan and the boiler-stack, which instantly descended the shaft through the fan, causing a slight shock, and raising the roof of the fan-drift about a foot out of place. The wind was blowing directly from the outcast toward the boiler-stack, and it is supposed the gas ignited from flame ascending the stack. The damage was only slight on the surface. William M. Thomas, the mine-foreman, and William G. Thomas and John Joseph, fire-bosses, descended the main shaft, and went in as far as the bottom of the air-shaft to see the result in the mine. This was very dangerous work, as another explosion might follow, but it was thought safer to go immediately after the explosion than after a delay. They returned in a short time, saying that considerable damage had been done inside, but they saw no indication of fire existing, and to make sure of being safe, they concluded to wait till the following morning before entering again. The next day they began to repair the damage, and an examination showed that the explosion had been very extensive, and had developed tremendous force, but the peculiar shape of the passages of the bottom of the air-shaft diverted its course, and thus saved the fan and the structure on top from destruction. All the doors from the shaft to the face of the workings were torn to frag-

ments. A large number of props were loosened along the gangway and in the breasts. Near the air-shaft, on the gangway, a number of loaded cars were piled into a mass of ruins. Near here, also, a bar of T iron, raised from the track, was broken in two pieces, one of which was bent to a figure resembling the number 8. The walls and débris filling the cross-headings between the gangways, and airways were swept out from all the cross-cuts that were inside of the air-shaft. The wood was charred with fire, and all the tool-boxes destroyed in all the breasts, from Nos. 30 to 49, inclusive, and the powder was exploded in most of these breasts. In several breasts full kegs of powder were exploded. Everywhere there were unmistakable signs that a terrific explosion had occurred, filling this portion of the mine with flame from roof to floor, a height of about eighteen feet. There was no sign discovered that coal had been on fire, and this confirms the supposition that the gas ignited from the boiler-stack. Fortunately, there was no one in the mine, and, therefore, there was no one injured. The company concluded to remove the boilers, and thus avert the possibility of another explosion occurring in the same manner.

Electric Signals in Mines.

Telephones were placed in the Old Franklin and Warrior Run slopes during the past year. These enable them to communicate freely from top to bottom and from bottom to top. The Lehigh and Wilkes-Barre Coal Company have introduced electric alarm bells from the fans into a number of their mines, so that the miners could be instantly called out in case the fan should break or fail to run.

Fans--Speed-Indicator.

Section seventeen, article ten, of the mine law requires that a recording instrument shall be provided on each fan in gaseous mines to register the number of revolutions, so that if the speed of the fan is retarded it may be detected. Mr. C. H. Scharar, engineer Delaware and Hudson collieries in this district, devised and patented an instrument for this purpose, and it is placed on the fan at the Conyngham colliery. It is working very satisfactorily, recording the speed of the fan for five days without changing the paper. It is attached to the engine, and a pencil draws a diagram on paper, indicating the speed at any time during a period of five days. A photograph of the instrument is presented in this report, to which the reader is referred.

Prosecution Under the New Mine Law.

The coroner's inquest, conducted by Esquire M. E. Walker, of Shickshinny, inquiring into the manner and mode of death of the ten men suffocated in the West End colliery, August 11, upon completing their investigation, returned the following verdict as their finding:

"We find, first, that the West End Coal Company is a corporation duly chartered, and is being operated under the mine laws of the Commonwealth.

"*Second*—That Peter Burckie, James Whalen, John Cygkoskie, Wilson Rymer, James Frey, Hiram O. Meade, Anthony Burckie, and Nicholas Burtels, on the 11th of August, 1885, were employed as miners and laborers by the said West End Coal Company.

"*Third*—That Christian Coonrad is the mine-boss for said company, and his duties as such are defined in section eight of the act of March 3, 1880, and article twelve, rule eight, of the act of June 30, 1885.

"*Fourth*—That on the morning of said 11th of August, Christian Coonrad, in utter disregard of his duty as mine-boss, knowing that the fan that supplies the mine with pure air had been disabled and not running for eight hours, permitted the said (names as above) and others, to the number of thirty-six, to enter the mine without any effort to ascertain whether or not the mine was free from danger. Indeed, as to his own testimony, 'without saying a single word to them.'

"*Fifth*—That William Zeinty, an employé of said West End Coal Company, was permitted by said Christian Coonrad to enter the slope leading to the mine after a score of persons, in attempting to go down said slope, had been stricken down with deadly gas, and when said Coonrad, as mine-boss, should have known that it was certain death for any one to enter.

"*Sixth*—That, by the gross negligence of said Christian Coonrad, the above-named persons came to their death by suffocation, owing to the accumulation of noxious and poisonous gases.

"In view of the foregoing, we do find that (names as above) came to their death aforesaid by asphyxiation; that we do further find and charge that the said (names repeated) came to their death aforesaid through the criminal negligence of Christian Coonrad, the mine-boss aforesaid."

The names of the persons acting as coroner's jury, and who signed the above verdict, were H. S. Clark, A. M. Coolbaugh, Webster Remaly, A. J. Crawford, George M. Beadle, and Hiram Dietrick.

After receiving a copy of the verdict and the names of the witnesses, the mine inspector presented the following petition to Judge Woodward on August 24, and he (the judge) directed a warrant to be issued, returnable on Thursday, September 10, 1885, at 10, A. M. On the 26th of August, Christian Coonrad appeared before the clerk of court, and gave bail for his appearance on the 10th of September in court.

The petition was as follows:

THE COMMONWEALTH OF PENNSYLVANIA
vs.
CHRISTIAN COONRAD.
} In the Court of Quarter Session of the Peace.

To the Honorable, the Judges of the Court of Quarter Sessions of Luzerne County:

Your petitioner respectfully represents as follows, to wit:

1. That he is the duly commissioned inspector of mines for the Third

district of Pennsylvania under the act approved June 30, 1885, entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith."

2. That there is in said district at the village of Mocanaqua an anthracite coal mine operated by a corporation styled "The West End Coal Company," and Christian Coonrad is the mine-foreman of said coal mine, and did hold such office of mine-foreman on the 11th day of August, A. D. 1885, under rule one of article twelve of said act.

3. That the said mine is operated through a tunnel, and has been so operated about four years, during which time said mine has not, to the best of your petitioner's knowledge and belief, generated explosive gases.

4. That on the 11th day of August, A. D. 1885, noxious gases prevailed in said mine arising from the fires under the boilers, which are located therein, and the stoppage of the fan from eleven o'clock on the night of the 10th of August, 1885, until after the following day, to wit: the 11th day of August, 1885, aforesaid.

5. That the said Christian Coonrad did not, on the morning of August 11, 1885, make an examination of the working-places and traveling-roads of said mine before the workmen entered the same, or mark proof of the same at the face of each working-place.

6. That the said Christian Coonrad did not establish a station at the entrance to said mine as required by rule seven of article twelve of the act aforesaid, and did permit the workmen to pass into the said mine without having inspected the same or reported the same to be safe.

7. That the said Christian Coonrad, knowing that said fan was stopped and out of order, and that the fires were burning under the boilers in said mine, liable to produce noxious gas, permitted a large number of workmen to enter said mine for the purpose of mining coal, and did not withdraw them from the mine or notify them of the danger, and did not cause an examination to be made by a competent person as required by rule eight of said article twelve of said act of 30th June, A. D. 1885.

8. That among the workmen who were so permitted to enter said mine the following were suffocated by the noxious gas prevailing in said mine, to wit: Peter Burskie, Anthony Burskie, James Whelan, John Bilby, John Cygkoskie, Wilson Rymer, James Frey, Hiram O. Meade, Nicholas Bertelson, and William Zienty, and the said workmen died from the effects of such suffocation.

9. That the coroner's inquest held upon the bodies of said men found this verdict: "That the said (here the names of the men are repeated) came to their death as aforesaid through the criminal negligence of Christian Coonrad, the mine-boss as aforesaid." A full copy of the findings of said inquest is hereto attached and made part of this petition.

10. Your petitioner, therefore, believing that the said Christian Coonrad has been negligently guilty of an offense against the act aforesaid, whereby a dangerous and fatal accident has resulted to persons employed in such mine, prays your honorable court to issue a warrant as directed by article eighteen of said act, and cause the said Christian Coonrad to be brought before your honors, and that your honors will take such action thereupon as justice requires and to your honors shall, on hearing the testimony, deem proper and lawful.

And he will ever pray, &c.

G. M. WILLIAMS.

LUZERNE COUNTY, *ss:*

G. M. Williams, being duly sworn according to law, deposes and says that the facts set forth in the above petition are correct and true as he verily believes.

Sworn and subscribed before me this 22d day of August, A. D. 1885.

THOMAS H. ATHERTON,
Notary Public.

(Here was appended a full copy of the finding of the coroner's jury, with the certificate of Walker, J. P., acting coroner, that it was correct.)

The case was tried before Judge Woodward on September 10 and 12, and was argued Saturday, September 26. It was tried without a jury. On October 7, Judge Woodward filed the following opinion:

THE COMMONWEALTH OF PENNSYLVANIA *vs.* CHRISTIAN COONRAD. } In the Court of Quarter Sessions of Luzerne county. No. —, September session, 1885.

On the 24th August, 1885, upon the presentation of an affidavit of G. M. Williams, the inspector of mines for the Third district of Pennsylvania, under the act entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith," approved 30th June, 1885, we directed a warrant to issue for the arrest of the defendant, returnable on the 10th September, 1885. Upon that day the testimony of witnesses was taken, and subsequently we listened to the arguments of counsel for and against the defendant.

The facts of the case may be briefly stated. At Mocanaqua, in Luzerne county, there is a colliery operated by a corporation known as "The West End Coal Company." The mine is worked through a tunnel and slope, and Christian Coonrad, the defendant in the present proceeding, was and is the mine-foreman thereof. On the 11th of August, 1885, owing to the disarrangement of the fan by the breaking of a strap on the eccentric, and the bending of the crank shaft, the air-current in the mine became reversed, and the gas generated by the fire under the boilers was taken through the workings of the mine instead of being conducted through the proper channel to the outside. At the time when this occurred, a gang or

shift of men were at work in the mine as usual. The machinery connected with the fan was taken apart by the mine engineer, and sent to the proper shop for repairs, the fire under the boilers being kept up. The fan stopped about eleven o'clock on the night of the 10th of August, and the workmen then in the mines came out between one and two o'clock on the morning of the 11th. The next gang went in at seven o'clock on the morning of the 11th, at which time the repairs to the machinery had not been completed. No examination of the mine seems to have been made by the mine foreman before these men went in to their work. About eight o'clock, the alarm was given that the workmen were being overpowered by the poisonous gas in the mine, and, as rapidly as possible, efforts were made for their rescue. The result was, that out of fifty or sixty men who entered the mine at seven o'clock, ten were brought out dead, and between twenty and thirty more or less disabled. The cause of death is thus stated by Dr. Hughes, who was examined as a witness:

Question—State whether or not, on the 11th day of last August, you were at the West End Coal Company's works.

Answer—I was.

Q. Whether or not you examined the bodies of a number of victims of that accident.

A. I saw them all.

Q. How many of them were dead?

A. Ten dead ones.

Q. How many others were affected and lived?

A. I could not tell that—a great many, twenty or thirty, I presume.

Q. State what caused the death of these men.

A. They died from asphyxiation, from poisonous gas—noxious gas produced the death.

Q. How were these men affected?

A. Those that I saw were unconscious, and I can only judge how they were affected by the way I was affected myself.

Q. You went in the mine, did you?

A. Yes, sir.

Q. What were the symptoms?

A. Bad feeling about the head, weakness about the lower extremities, and considerable headache—had a great headache for a considerable time after.

Q. It was owing to the breathing of the noxious gases that prevailed in the mine?

A. Yes, sir.

The cause of the disaster is further explained by the testimony of Mr. Williams, the mine inspector, to which we now call attention:

Q. Will you state, from your examination, and your knowledge of mining and ventilating apparatus, what was the cause of this disaster?

A. The cause arose from the fan breaking, and the air current reversing, taking the gases from the boiler fires into the working.

Q. What is the nature of those gases?

A. A carbonate oxide, and carbonate acid, perhaps mixed.

Q. They are the gases that are produced by the burning of the coal under the boilers?

A. Yes, sir. The fan is located between the boilers and the outlet, where the air is going out of the mine, and the heat from the boilers keeps the passage warm for a certain length of time. As long as the heat would be maintained at a higher temperature than the heat of the atmosphere outside, the air-current would pass out in the right direction. But if that should become cooler than the outside air, then the air would reverse and take the other course; consequently, it would take the gases from the boilers down through the workings.

Q. Was the danger arising from this cause an obscure or latent danger, or was it a danger which is, or ought to be, known to all men having charge of mines?

A. Well, that depends upon the experience and knowledge of the mine-foreman.

Q. If he is a man thoroughly qualified for his position?

A. Every foreman ought to know that when the elevation of the two openings in a mine is different—if one opening is higher that the other—every foreman ought to know that when the air is warmer outside than it is inside, the air-current will pass down through the higher opening.

The act of June 30, 1885, provides in article ten, section one, that "the owner, operator, or superintendent of every mine shall provide and maintain an adequate supply of pure air for the same, as hereinafter provided."

Section four of the same article provides that "the ventilating currents shall be conducted and circulated to and along the face of each and every working-place throughout the entire mine in sufficient quantities to dilute, render harmless, and sweep away smoke and noxious or dangerous gases, to such an extent that all working-places and traveling-roads shall be in a safe and fit state to work and travel therein."

Rule three, of the general rules, in regard to mines, contained in article twelve, is as follows:

"The mine-foreman shall have charge of all matters pertaining to ventilation, and the speed of the ventilators shall be particularly under his charge and direction."

The office of mine-foreman is created, and the duties of the office further explained by rule one, of the same article, in these words:

"The owner, operator, or superintendent of a mine or colliery shall place the underground workings thereof, and all that is related to the same, under the charge and *daily* supervision of a competent person who shall be called 'mine foreman.'"

Rule eight is as follows:

"If, at any time, it is found by the person for the time being in charge of the mine, or any part thereof, that by reason of noxious gases prevailing in such mine, or such part thereof, *or of any cause whatever*, the mine or the said part is dangerous, every workman, except such persons as may be required to remove the danger, shall be withdrawn from the mine, or such part thereof as is so found dangerous, until the said part thereof is examined by a competent person, and reported by him to be safe."

We have thus endeavored to state fairly, and as fully as necessary for the consideration of the case before us, the nature and cause of the terrible disaster at the West End colliery, on the 11th of August; and also to bring clearly into view those provisions of the act of June 30, 1885, which seem to be applicable to the question presented for our determination. That question is this: Was the defendant, Christian Coonrad, guilty of an offense against the act of Assembly by his failure to comply with its requirements, and did his negligence and failure to comply with those requirements result in and cause the disaster?

Without quoting the testimony of the witnesses at length, we have no doubt from the evidence before us that the defendant had knowledge of the fact that the fan had stopped, and that he did not prevent the workmen from going into the mine on the morning of the accident, notwithstanding this knowledge. Now, a mine-foreman ought to know that in a mine dependent for its ventilation upon such appliances as were in use at this colliery, the breaking of the fan, and the presence of fire under the boilers, would tend to produce a poisonous gas, and drive it through the mines. And that this defendant was aware of this is shown by the fact that he said to the driver-boss, the men "have no business down there" until the fan shall be started, as well as by other declarations made by him, which, while failing to amount to peremptory orders to the men to leave the mine, still serve to show that he was not ignorant of the danger. A very large proportion of the accidents, so called, which, from time to time occur at our collieries, is traceable to that species of negligence which comes of familiarity with danger, and a habit of taking the chances. But experience has shown that the business of mining anthracite coal cannot be prosecuted at hap hazard, but that success and safety are only to be secured by the most thorough organization of the forces employed, and by a rigid obedience to the rules and regulations adopted and prescribed. A coal mine at best is a dangerous place. The men who, day after day, go in the mines are exposed to more peril, and encounter hazards of a greater variety than those engaged in almost any other occupation. And it is in view of such considerations that our legislation on the subject has been directed to framing a statute, which has for its subject, as its title indicates, "to provide for the health and safety of persons employed in and about the anthracite

coal mines of Pennsylvania, and for the protection and preservation of property connected therewith." And while it is true that this statute is a penal one, and as such, according to the maxim of the law, is to be strictly construed, it is also true that the wise and benevolent purpose of the act is not to be defeated by judicial refinements and an over-sensitive regard for possible doubts. We adopt the language of Mr. Justice Thompson, in Bartolett *vs.* Achey, 38 Penn. St., 277: "I admit that the statute * * * being a penal statute, is to be strictly construed; but this means no more than that nothing is to be taken against the party charged by intendment. The meaning of the statute, if plain, is to be followed, notwithstanding, as in any other case. * * * Strict construction is not the same thing as construing everything to defeat the action. This is not what is meant by the expression."

The act of 30 June, 1885, imposes upon the mine-foreman duties of the most important character. He is clothed with great power, and made responsible for the faithful exercise of his authority. He is to have the charge and "daily supervision" of all the underground workings, as well as to all matters pertaining to the ventilation of the mines. Under rule eight, to which we have before referred, if, by reason of noxious gases, "or of any cause whatever," the mine or any part of it becomes dangerous, every workman is to be withdrawn from the mine, and not be allowed to reënter it until after a proper examination of, and report upon, its condition. It would seem to have been the intention of the framers of this act to concentrate in the mine-foreman the chief magistracy, so to speak, of the mine. If he is unable to give his personal attention to all the details of the mining operations, it is provided by rule two that the owner, operator, or superintendent "shall authorize him to employ a sufficient number of competent persons to act as his assistants, who shall be subject to his orders." Our attention has been called to the fact that this act of Assembly had been approved but little more than a month before the disaster at this colliery occurred, and had not been published. This, of course, would not relieve us of the obligation to enforce the law, but at the same time, in the case of an entirely new system of legislation, it might incline us to a more tolerant and less exacting view of the circumstances than we should otherwise feel bound to adopt. But the truth is, that so far as regards the duties of the mine-foreman or boss, there is no material difference, as respects the question now presented, between the recent act of Assembly and that of March 3, 1870. The eighth section of that act provides that every coal mine and colliery "shall employ a practical inside overseer, to be called mining-boss, who shall keep a careful watch over the ventilating apparatus," etc.

As we have before said, there can be no doubt that the defendant was fully informed of the accident which had interrupted the working of the fan before the workmen had entered the mine on the morning of the 11th

SCHARAR'S SPEED AND TIME RECORDER.
PAT'D FEBR. 2–86.

of August. Nor can it be doubted that he was an officer of sufficient intelligence and familiarity with the business of mining to know that the mine was liable to become dangerous by reason of this state of things. What, then, was his duty? Clearly, to permit no one to enter the mine except such person or persons as would be prepared and competent to make a careful and skillful examination and report. There is some evidence in the case that the defendant did warn some of the workmen not to enter, and notified them that the fan had stopped. But notice and warnings were not what the occasion and the circumstances called for—a stern and peremptory command was the one thing needful, and that the mine-foreman, as the commander, had the right to give.

It is admitted that this mine did not generate what are known as "explosive gases." Those portions of the statute which prescribe the rules and precautions to be observed in reference to mines generating such gases are, therefore, not those to which we must refer ourselves in the present case. We have considered it as a case arising under other sections of the act, and especially in its relations to rule eight of article twelve, and to article ten, which is devoted to the subject of ventilation. And it seems to us that, under the evidence in the case, the defendant was guilty of neglect, and of a failure to comply with the requirements of the statute.

That the disaster which occurred was the result of this negligence on the part of the mine-foreman, we can see no good reason to doubt. Dr. Hughes, who reached the scene of the disaster shortly after it happened, and whose testimony has already been noticed, describes his sensations as he entered the mine. Other witnesses bear testimony to the same effect. There is nothing in any of the evidence taken which tends to show that a careful and thorough examination of the mine on the morning of the 11th of August, by a skilled and competent expert, such as a mine-foreman is supposed and ought to be, would not have disclosed the presence of noxious and dangerous gas. The failure to make such an examination, and the death of the ten men who perished in the mine, stand, therefore, in this case, in the relation of cause and effect; for it is not to be presumed for a moment that if the true condition of the mine had been known the workmen would have been permitted to incur a danger with which no courage, no power of will, nor strength of body, was competent to cope.

It is made our duty by article eighteen of the statute to ascertain in a case like the one under consideration, whether or not the defendant is guilty "willfully or negligently" of any offense against the provisions of the act. After a careful consideration of the case, as presented to us by the testimony of the witnesses and the arguments of counsel, we are of the opinion that Christian Coonrad is guilty of negligence, and of an offense against the provisions of the act of Assembly of 30th June, 1885. It only remains for us to impose upon him the sentence of the law.

Stanley Woodward, *Judge.*

On Monday, October 12, the defendant appeared to hear the sentence of the court. His attorneys made a very earnest plea for light punishment, inasmuch as this was the first case under the new mine laws, and no copies of the law having yet been printed, the defendant had had no opportunity to know its requirements. The sentence of the court was that he should pay a fine of fifty dollars and costs of prosecution.

This is the highest fine that can be imposed under the present law for offenses of this class, but imprisonment may be added if the court thinks it proper and justifiable. This case was brought on soon after the present law was enacted, and only a few had seen copies of it, and, owing to this and the earnest pleading of the counsel for the defense, the sentence was, perhaps, moderated.

DESCRIPTION OF FATAL ACCIDENTS.

Fatal Accidents by Explosions of Gas.

ACCIDENTS, Nos. 8 AND 9.—James Solomon and John D. Jones, both laborers, were fatally injured by an explosion of gas in the Hillman Vein shaft, Wilkes-Barre, February 17, 1885. The former died from his injuries the same day, and the latter died on February 26. Eleven persons besides these were more or less injured by the same explosion. The accident happened at about ten o'clock, A. M. One of the bearings of the fan heated from some cause which could not be definitely ascertained, and caused the fan to retard speed and finally to stop for about ten minutes. In the meantime, a messenger was sent to call the workmen out of the mine, but just as he arrived in the gangway, the explosion occurred, injuring him with the others. It is a very gassy mine. With no ventilation, enough gas will accumulate in ten minutes to cause a terrific explosion, and it happened so on this occasion.

ACCIDENTS, Nos. 18, 19, AND 20.—Frank Fartkofskey, a miner, Joseph Grudofskey, a laborer, and Christian Powell, a brattice-man, were fatally burned by an explosion of gas in the No. 4 slope, Nanticoke, June 4, 1885. This accident was the result of the inexcusable heedlessness and stupidity of the two Polanders, Fartkofskey and Grudofskey, the former most particularly, as he was the miner. The fire boss, while examining the mine that morning, had discovered a check-door open which had caused a large body of gas to accumulate at the face of the two breasts between which the said door was located. He closed the door, but, knowing that the two upper cross-cuts between the two breasts were open, he thought the gas would not be swept away. Therefore, upon seeing the miner Fartkofskey at the fire-boss station, and also his laborer, he told them that a large body of gas was in the breast, and gave them positive orders not to go up from the gangway until he (the fire-boss) would come in and give them permission. They went in and waited a short time on the gangway, but, being desirous of going to work, they went up the breast for that purpose. The

brattice-man, Powell, and his assistant were about going to close the lowest of the two open cross-cuts, saw the two Polanders going up the outside breast and drove them back to the gangway, cautioning them to remain there until the fire-boss came in. After closing the cross-cut with boards, Powell and his helper were in the inside breast. The latter took the tools down toward the gangway, while Powell went up with a safety-lamp to see whether the gas was moving away or not. At the same time, the Polanders stole up the other breast, and meeting the gas, fired it from their naked lights. In the explosion which followed, both Powell and they were fatally burned.

Accidents, Nos. 50 to 55 Inclusive.—Frank Lamaraux, John Kerst, and Dennis Titus, Carpenters, Frank Spinnette, Anthony Spinnette, laborers, and Thomas Collins, miner, were fatally burned by an explosion of fire-damp in the No. 2 shaft, Plymouth, October 21, 1885. There were ten other persons severely burned at the same time. The mine had been idle for over nine months, and a few days before this accident occurred, a number of men were set to work repairing the inside barn and repairing the tracks and putting them in order for starting operations in the mine. At seven o'clock this morning, they descended the shaft to their work, as they had done the other mornings. There are two seams mined in the shaft, one at the bottom and another about midway in the shaft. Part of the men got off at the upper seam, called the Tunnel, and the others descended to the lowest one. The passing branch at the Tunnel landing is made in a dirty seam of coal which is not mined, at the terminus of which a rock tunnel (see rock plane on plan) was driven up to the Hillman seam on a grade, so that the coal mined in the latter is lowered by gravity. All the coal hoisted from this landing was mined in the Hillman seam and lowered over this rock gravity-plane to the passing or double branch at the shaft. At right angle to the gangway at the foot of this plane, two parallel openings had been driven about seven years ago to a distance of about six hundred feet and had been abandoned, (see AA, on map.) It appears that these two places were filled with fire damp on this morning to a point not far from the gangway. About eight o'clock John Levitzkie, one of the laborers, not knowing that any danger existed, went up one of these places at X and fired the gas. He was severely burned and he ran out and up the plane, when the men who worked there met him and took him out through the No. 1 shaft. No one else was hurt from this explosion. Dennis Titus and the others who worked with him in the barn ran down to the gangway and saw the flames extending out of the old opening at B and part of the way up the plane. He then sent a young man (his helper) out to tell the boss. This young man ascended the shaft and saw Howard, the acting fire-boss, and three machinists ready to descend. They descended with him and got off at the tunnel landing. The young man stayed on the cage and descended to the bottom seam. He there met the boss and was telling

him of the accident, when another explosion occurred, the concussion of which was very forcible. They ascended the shaft immediately to the tunnel, and found those who were able to walk coming out toward the shaft, (see plan.) Dennis Titus was instantly killed, and his body was found under a car about four hundred feet from the shaft. All the others were severely burned, and five of them died shortly after from their injuries.

The cause of the accumulation of such a large body of gas is not yet definitely explained. The coroner held an inquest, but he selected a jury which proved utterly incompetent. Some of them had been working, more or less, in coal mines, but it was evident that they knew nothing of the principles of mine ventilation, nor of the laws governing gases in mines, consequently their verdict was very unsatisfactory. They attributed the accumulation of gas to the fact that a double door, which was on one track of the double branch, had been allowed to stand open for a short time, yet this place was left without a door for two weeks after the explosion, and some of the jury were invited and went to see the effect, and no gas was found to have accumulated. It was proven conclusively that the neglect of this door was not the cause of the accumulation of gas, and that sufficient air circulated through the abandoned places to keep them safe without the door. In view of this fact, some other cause must have existed for the accumulation of the gas. One of the old openings was a continuation of the air-way turning right angle; the other was opened from the gangway at foot of the plane. In the lowest or first cross-cut there was a small man-door (see door to mule barn) placed to enable persons to pass from one place to the other without going around the faces. This had rotted, and fell down during the idle time, leaving a passage for the air-current to cross without going around the faces. This, and the stoppage of the fan for repair, &c., would leave the old openings unventilated, and, consequently, the gas evolved therein would accumulate in a large body; but the fire-boss swore that he examined both places three days prior to the accident, and found them clear of standing gas. If he tells the truth, the presence of a body of gas on the morning of the accident is a mystery which cannot be explained; but if he does not tell the truth, and had not examined the said places since starting to work, the facts stated must have been the cause of the fire-damp accumulating. They had not seen standing gas in these openings before for seven years, and, if they had suspected its presence on this morning, the accident could have very easily been averted.

Fatal Accidents by Falls of Roof and Coal.

There were 38 severely injured and 17 deaths from falls of roof and coal in the Third district during 1885. Accidents of this class occur nearly in the same manner continuously, and at least three fourths are the result of too much haste or too much indifference to the dangers which may

exist from loose coal or roof. Some rush back to work too soon after blasting, and do not use proper precaution in approaching the face while the place is full of powder-smoke, making it impossible to see loose rock or coal. Others stand in a reckless position to pry loose coal or rock down with a drill or bar, and are caught under it when it falls. It is unnecessary to describe this class of accidents in detail, as that has been done in previous reports, for they occur nearly in the same manner every year.

Accidents by Falling Down Shafts.

Four fatal and one non-fatal accident happened from this cause in the Third district during 1885. The fatal ones are described as follows:

Accident, No. 5.—Daniel Eagan, a sinker, was killed by falling down the Woodward shaft, No. 1, January 26, 1885. The deceased and Edward Devons were standing on the edge of the bucket while being hoisted up the shaft. Upon reaching the landing, apprehending something wrong by seeing the bucket hoisted above the usual height, both jumped off. Devons escaped, and Eagan fell back down the shaft, a depth of over 900 feet. The engineer failed to stop the engine, because the latch-pin of the reversing-lever dropped out of place, and, in his excitement, forgot to apply the brake until he heard the shieve-wheel and head-structure pulled down toward the engine-house.

Accident, No. 13.—Michael St. John, a sinker, was killed in the Woodward shaft, No. 1, April 13, 1885. There were five men besides the deceased working on a platform about 60 feet from the bottom of the shaft. St. John was wedging the end of a buntin, while the others were raising a part of the platform to buntins four feet higher. After he had fastened the buntin, he stooped suddenly and crossed under it, stepping over the end of that length of platform, and fell to the bottom of the shaft and was instantly killed. Being absorbed in his work, he evidently forgot that the platform had just been raised from that end of the shaft.

Accident, No. 14.—Frank Dinany, a driver, instantly killed by falling down the Nottingham shaft, Plymouth, April 15, 1885. At about six o'clock, p. m., Henry P. Thomas and the deceased were going to work on the night shift. The east cage was standing at the landing, and they both went on for the purpose of descending, without informing the engineer. While they were in the act of pulling the gate down, after passing on the cage, a signal was given from below to lower the other cage, and the engineer immediately started the engine. When the cage was raised, Dinany, having hold of the gate, lost his balance and fell down the shaft.

Accident, No. 49.—Ivor Williams, a door-boy, was killed in the Dodson shaft, October 15, 1885. There were nine or ten persons on the cage ascending the shaft at quitting time; the deceased was among them. When within about forty feet to the top, he fell against the side of the shaft and down to the bottom. None of those who were on the cage noticed how he

fell, it happened so quick. He was leaning on the guard rail, and his clothing may have caught the side of the shaft and pulled him off. It was a very safe cage, guarded well with railing all around.

Accidents by Being Crushed by Mine Cars.

Thirty accidents occurred from this cause during 1885, six of which were fatal. This class of accidents are nearly all the result of carelessness, and it is difficult to prevent them for that reason. The fatal ones happened in the following manner:

ACCIDENT, No. 1.—Frank Shivitzkey, a driver, was instantly killed in the No. 1 slope, Nanticoke, January 8, 1885. He was driving a team of two mules; was riding on the front end of a trip of four loaded cars coming out of the upper west gangway. After going a distance of one hundred yards, in some unknown manner, he fell, and the cars ran upon him, dragging him a distance of about ten feet, killing him instantly. No one witnessed the accident, but he was found under the cars dead. The gangway was thirteen feet wide at that point, and there was ample room on both sides of the cars. He evidently slipped while trying to hang on the front car, and was caught and ran upon.

ACCIDENT, No. 3.—Paul Polinskey, a laborer, was fatally hurt in the No. 2 shaft, Nanticoke, January 16, 1885. He had gone from the face of the breast where he was working, a distance of about seven hundred feet; was standing with his back against a prop. The runner was bringing a car down by brake, and running quite fast; it jumped the track and ran against the deceased. The prop stood over three feet from the track, and there was ample room behind it, but the stupid fellow stood coolly in the most dangerous position that he could find, and lost his life thereby.

ACCIDENT, No. 6.—Enoch Jones, a driver, was fatally hurt in the Lance colliery, Plymouth, February 2, and died therefrom February 5, 1885. Jones was working on the night shift. He pulled a car out of the gangway to a point a few feet inside of one of the breast branches. An empty car was standing on the gangway outside of this. He hitched the mule to this car and was hauling it to the breast, when the mule, stepping on the latch, caused the car to run on the gangway track. The driver, being on that side, was jammed between the two cars. This was what we may rightly call an accident. The boy did not suspect that such a thing as the car taking the wrong track might happen.

ACCIDENT, No. 26.—Patrick Gallagher, a laborer, was fatally injured in the Warrior Run mine, July 3, 1885, and died on the 5th of the same month. John Owens, the door-boy, walked up the run to tell the runner to run the cars down. On going up, and also on returning, he saw Gallagher sitting on the platform of the breast where he was working. The cars were run down, and they stopped about six feet outside of the said platform, and the runner having seen a light as if struck by the cars went

forward and found Gallagher under them severely injured. He had stepped down to the gangway just as the cars were approaching, and was struck down and run upon.

Accident, No. 29.—John Smith, a miner, was fatally injured in the Alden mine, July 18, 1885, and died in a few minutes after. Smith was working one of a number of breasts turned off a run. He and his laborer were standing on the platform near the gangway when the runners were running the cars down from each platform. One car had passed while they were there, and one runner called the other to run another down. At this time, Smith stepped down to the gangway to show the tickets to the laborer, (a strange one,) when the car, having four sprags in the wheel, came noiselessly and struck him down, and ran over him. He died in a few minutes.

Accident, No. 30.—John Adomzack, a laborer, was fatally hurt in the No. 2 shaft, Nanticoke, July 27, 1885, and died from his injuries, July 29. The deceased was working with Frank Nicklass, a miner, who, when the accident occurred, was about going to extend the track in his breast. The loaded car being in the way, he and his two laborers went to run it down a short distance. The deceased was at the brake on the front end, while the miner drew the stopping-block. After starting, the brake proving useless, the car ran away down the breast, crushing through a door, where the laborer, who had clung on all the time, was severely injured. He here fell, and the car ran upon him and stopped. He died at the time stated. The miner, in this instance, ought to have examined the brake carefully before undertaking to move the car, especially when the lever was forward or on the front end of the car.

Accidents by Explosions of Powder and Blasts.

Twenty-six accidents occurred of this class, during 1885, and six of them proved fatal. Several of this class of casualties happen in a mysterious manner, and cause much doubt as to the safe construction of some of the squibs used. In a number of cases, the squibs have exploded instantly upon igniting the match, proving that either the squibs were defective when bought, or that they had been made so by tampering with them. No doubt many miners are careless in handling the squibs, and often cut the match too short. By cutting the match, also, they are apt to untwist it, so as to leave the powder run back near the point of ignition. Many accidents occur also owing to the haste of miners to return, concluding that the squib is missed, when in fact the match has not had time to burn to the powder, and upon their return the blast explodes. These are some of the causes of this class of casualties which so frequently prove serious.

Accident, No. —.—Michael Haley, a miner, was seriously injured in the Gaylord colliery, Plymouth, March 20, 1885, and died the following day. He was working a breast in the Red Ash seam, which is about eighteen

feet thick. He was firing a blast in the top bench, which was mined first. He fired the match, and ran about seven yards, when the blast fired. A lump of coal thrown by it struck him on his head, fracturing his skull. He was unconscious when found, and he remained so until he died.

ACCIDENT, No. 23.—Richard Emmitt, a miner, was fatally injured in the Hollenback mine, Wilkes Barre, June 22, 1885, and died in fifteen minutes after. While he was in the act of igniting the match, the squib instantly took fire and exploded the blast. He had no time to move. It was a Daddow & Beadle touch-squib, but whether the fault was in the squib or in him could not be ascertained. He was an old miner and was generally careful at his work.

ACCIDENT, No. 27.—Michael Furtie, a laborer, was instantly killed in the Reynolds mine, Plymouth, July 6, 1885. The deceased had gone to work on the night shift to help another laborer who was working with Joseph Short. The three were Polanders, and it appears from the evidence obtained that the three were intoxicated. They were beginning to open a breast from the gangway. John and Patrick O'Neal, brothers, were driving a cross-cut from the air-way below, which was expected to break through the pillar to the gangway opposite where the Polanders were opening the breast. Short was back at his box preparing powder while the two laborers were drilling a hole, when the two O'Neals were firing a shot in the cross-cut. They came up to the gangway and gave the usual alarm, but the two laborers, being drunk, paid no attention to it. They shouted fire several times, but the laborers continued at work until the shot fired and burst through the pillar, killing Furtie instantly. The other laborer escaped without injury.

ACCIDENT, No. 28.—Llewellyn Daniels, a miner, was instantly killed in the No. 2 slope, Nanticoke, July 8, 1885. Daniels had a very wet hole to fire. His laborer, Benjamin Adams, helped him to charge it and then was taking the tools back when the shot fired. Daniels had not moved from the hole when it fired and he was instantly killed. The laborer and another man, who was driving a cross-cut close by, very narrowly escaped without injury. The deceased was a very hasty man and was making the matches very short when firing blasts. The match on this occasion was cut too short, and he lost his life owing to it.

ACCIDENT, No. 58.—Henry McCloskey, a miner, was fatally burned by an explosion of powder in the Maffit mine, November 16, 1885, and died at the hospital November 24. While he was filling a cartridge with powder, a spark flew from his lamp and fired it; this again fired the powder in the keg, two thirds full, burning him severely. If he had observed the law and complied with it, his lamp would have been in such a position that this accident could not have occurred in the manner it did.

ACCIDENT, No 62.—John Lynot, a miner, was fatally hurt in the Empire mine, Wilkes Barre, December 5, 1885, and died December 8. While firing

a blast in the top coal, the first squib missed. He then returned and tried another. Supposing this missed also, he was going back the second time, when, as he was approaching the hole, it fired, breaking down about five tons of coal. Part of this struck him, cutting his leg nearly off and bruising him badly about his head. He was removed to the hospital and died there at the time stated.

Accidents from Miscellaneous Causes Underground.

Fifty-nine accidents occurred in this class during 1885. Thirty-nine were fatal. Ten persons were lost at once in the West End colliery and twenty-six in the No. 1 slope, Nanticoke.

Accident, No. 4.—Thomas Smith, engineer, was killed in the Stanton shaft, Wilkes-Barre, January 20, 1885. The water had gained on the pump in the shaft and a bucket was used instead of one of the cages to hoist water. Smith was running the pumping engine and was on the night-shift. About half past six, A. M., his curiosity led him to descend the shaft to see how low the water was. Because the bell-wire was frozen fast to the buntins, he made arrangements with the hoisting engineer to lower the cage as far as the surface of the water, which was about four feet above the track at the bottom, and after waiting two minutes to hoist it up again. When the cage came up Smith was not on. It was lowered again and held down a short time, but came up without him again. Then, after searching for several hours, his body was found in the sump under water, the marks upon which indicated that he had been caught between the cage and buntin. Several theories were suggested in explanation of the manner it occurred, but none of them could be definitely proven to be right.

Accident, No. 7.—John Hennesey, a miner, was kicked in the abdomen by a mule, in the Avondale mine, near Plymouth, February 7, 1885, and died the following day. The mule kicked him while passing him in the mine.

Accident, No. 15.—George Williams, a sinker, was fatally injured in the South Wilkes-Barre shaft, April 23, 1885, in the following manner: While working with several others at the bottom of the shaft sinking, it was supposed that a small piece of rock, falling from above, struck him on his head. He fell suddenly, and when his fellow-workmen raised him up his skull was severely factured. No one heard the stone falling, but from the nature of the injury it is believed that it was caused in that way. He was removed to the hospital, and died there in a few hours.

The West End Disaster.

The West End colliery, near the village of Mocanaqua, across the river from Shickshinny, was the scene of a shocking disaster on the 11th of August, 1885. Ten men lost their lives from breathing the poisonous gases which arose from the fires under the boilers in the mine. The mouth of

the drift through which the coal is brought out of this mine is four thousand five hundred feet east of the breaker, and the mine cars are hauled from a turnout two thousand feet inside of the drift-mouth to the breaker. All the workings between the mouth and the turnout above water level were finished, the coal having been mined out to the outcrop. At the inner end of the turnout there is a slope sunk diagonally down the pitch on a small grade about six degrees, to a distance of one thousand two hundred feet. There were workings on each side of the slope. The coal above water level is mined above a gravity-plane, between that and the outcrop. The foot of the plane is about five hundred feet inside of the head of the slope. Owing to the difficulty of obtaining water on the surface, the boilers which generate steam to run the slope engine and the fan engine were placed in the mine a short distance below the head of the slope on the left side, where the air-current returns to the out-cast. The fan was located about three hundred feet away from the boilers, between them and the out-cast, and from the fan to the mouth of the up-cast there was a distance of over one thousand feet, rising on an average grade of about fifteen degrees. Thus the air-current first passed through the workings of the slope, and then up behind the boilers, taking with it the gases arising from the fires through the fan, and directly out through the up-cast. On the night of the 10th of August, at about eleven o'clock, the eccentric strap on the fan engine broke, and the fan stopped running. There were a few men working on the night shift, but as they had never seen or heard of dangerous gases being generated in the mine, the stoppage of the fan caused no alarm, and they finished their night's work before leaving without suffering any inconvenience from lack of ventilation. By half-past seven next morning, the eccentric strap was repaired ready to take into the mine, and the engineer, machinist, and mine foreman together took it with them, and rode from the breaker on the locomotive train into the mine. There were from forty to fifty workmen riding in on the same train. All knew that the fan had broken and was not running, but it seems that no one apprehended any danger. Upon reaching the turnout at the head of the slope, the mine-boss and the machinist took the strap toward the fan, and the workmen went on to their working-places. At this time it was believed that the fan could be fixed to run in about half an hour, but after putting the eccentric strap in place, the engine was started, and it would not run. The boss and others went in to the fan several times to pry it off the center, and finally they discovered that the fan-shaft was bent so that it could not run. Messages came to the boss, at this time, that the men were getting sick down the slope by inhaling foul air, and could not walk out. The boss himself was affected in the same manner by inhaling the noxious gases in the fan, and he soon became unconscious.

The air was healthy on the west side of the slope, and the men from that side ran to assist those on the other side; but the subtle poison was

such as to effect them again in a short time, and it proved a difficult task for even these to escape. Many fell unconscious and had to be carried up the slope and sent out in cars. By mid-day a large number had to be carried out, being unconscious, three of whom were dead and seven more missing, nearly every one who worked in that mine having been helping. The slope-men were, by this time, sick from inhaling the gas. A fresh relay of men came in the afternoon and succeeded in bringing out the bodies of the remaining seven. They were found lying at various points on the gangways of the east side workings. The names of those who died are Wilson Rymer, John Bilby, Nicholas Bertels, James Fry, Hiram O. Meade, John Winskoski, Peter Boruzki, James Whalen, William Zienti, and Anthony Boruzki. The cause of the accident was that, during the time the fan was not running, the air-current reversed, and instead of conveying the gases produced from the combustion of coal under the boilers out through the up-cast, the air came in that way, and conveyed the gases down into the workings, and the men who worked in those workings which it entered first were the ones that suffered first from inhaling it. The air-current must have changed its course only a short time before the men entered their places. Upon entering, they were taken sick immediately after reaching the faces of their working-places, but were reluctant to leave so soon, believing that the fan would start and refresh the air every minute. However, they finally started out, and the ten named fell and failed to reach a point where the air was pure. Others fell in the same manner, but were rescued by workmen from the other parts of the mine.

The night and morning were very warm and close, and when the temperature of the up-cast air became cooler than the temperature of the air outside, the current naturally reversed. The mine-foreman did not expect this to take place, and, believing that there was no danger, permitted the men to go to work. It was here he made a serious mistake. Whether he thought it was safe or not, he should not have permitted them to go to work until the fan was set running and the working-places examined and ascertained to be safe; but, having never seen any danger in the mine, these precautions were overlooked.

Esquire Walker, of Shickshinny, empanelled a jury, and held an inquest on the deaths of the victims of this accident, and in their verdict they laid the blame for its occurrence on the mine-foreman, Christian Coonrad. He was prosecuted for violation of the mine laws, and was convicted. (See another part of this report for account of the prosecution.)

A Disaster in the No. 1 Slope, Nanticoke.

At about ten o'clock, A. M., December 18, 1885, a large body of quicksand and water broke through the roof into the Ross seam workings of this mine, causing the death of twenty six persons. Since the accident at the West Pittston mine in 1871, no disaster has been so fatal to human life

in the anthracite coal fields as this one. The No. 1 slope was sunk on the lowest, or Red Ash seam, and this seam is nearly all worked out, so far as it can be mined from this slope. In 1881, a tunnel was driven from the third lift at a distance of about 120 feet west of the slope to the Ross seam, the next one above. This tunnel reached the vein at a distance of 487 feet horizontally. Since then the workings in the Ross seam have been extended to the extent described on the accompanying map. For the first 2,000 feet the average dip of the seam is about 18 degrees. Here the gangway curves sharply around the synclinal of a basin, and back on the strike of another dip, and again around the saddle of a small anticlinal. (See map.) Most of the persons lost were working in breasts on this saddle, and within a short distance of the point where the sand broke in. There were four persons working in the basin, at the foot of places driven up to the counter-gangway on top of the saddle. (See B on map.) One of these escaped and said that he saw the other three struggling in the mud behind him. Those three are among the lost. The two drivers, the runner, and door-boy, had gone in with cars about half an hour before the sand broke in, and it is supposed that they had reached the miners who were working on the anticlinal before the accident happened. In less than one hour from the time it broke in, the gangways were completely filled from floor to roof, all the way out to the slope, and up part of the way into the breasts. All the men who worked the breasts on the right of the straight gangway escaped through the faces of the breasts and out through the air-shaft. Upon exploring the workings above the sand-level, a mistake was made in the location of the cave, and, while laboring under this mistake, it was generally believed that the men who worked on the saddle described were on higher ground than that which the sand had filled, and, consequently, were probably all alive. A large gang of men were at once set to work to effect a passage through the sand down a breast at a distance of about 2,000 feet from the air-shaft, and by Monday evening, December 21, they had reached the bottom of the basin, right opposite a hole which had been driven on the opposite side or other pitch, to the counter-gangway on top of the saddle. As far as they could see with the light of a Clanny safety-lamp, this hole was clear of sand, and they were greatly elated and encouraged by the prospect, believing that they could rescue the entombed men in a few hours. The said hole was rising about 45 degrees, too steep to climb up without ladders or steps, and orders were promptly sent out for ladders. While waiting for them, an old battery was cut out of the way at the bottom of the hole, and occasionally, while doing that, small quantities of dirt were noticed to fall from above, which caused them to be watchful and ready to retreat in case a rush should come.

Shortly after cutting the battery away a large quantity rushed down and drove them all back. The passage made through the sand was only three

and a half feet high and about the same width, and it was made a distance of about two hundred and fifty feet. The *débris* had to be carried away in buckets, and at this time there were about sixty men employed, one behind the other, handing the buckets back and forth. It was thought difficult for so many to escape in case water and sand rushed in again, therefore seven or eight only returned to see what fell, and while they were at the bottom it rushed down again, and filled the passage all the way up to about twenty feet higher than when they started to make it, and the men escaped only by the greatest exertion. If the whole number had returned, there is no doubt that the most of them would have been caught, and added to the number already entombed, but, fortunately, the few that had returned were not so much in one another's way, and they escaped. With this unexpected occurrence, all hopes of rescuing the entombed men alive were dispelled, and a gloom of disappointment was wrought on every one's countenance. This also caused the officials to think that probably the sand bar broke at the top of the anticlinal or saddle, and the engineers were set to work to locate the hole seen on the surface on the map of the workings. This hole was a deep cone-shaped depression on the culm bank, and was about three hundred feet diameter on top. When the survey was done, it proved that the cave broke in near the solid at the face of the counter-gangway on the apex of the anticlinal, and that all the entombed men were very probably caught and killed soon after the sand broke into the mine. It also showed that the only way to recover them would be by clearing the gangway from the slope in until they were found, and this work was commenced at once and pushed vigorously up to the date of this writing, February 25, 1886. The sand was found to be packed tight from the floor to the roof in the two gangways, and although they have cleared the main gangway to a point within two hundred feet of the curve, not one body has yet been recovered. The officers of the company fear another rush of quick-sand when the gangway is cleaned to the curve, and the probabilities at present are that that will take place. If it does, the bodies can never be recovered, and it is doubtful, also, whether the workmen who are clearing the gangway can escape if it should rush in under the great pressure supposed to be behind it. The danger apprehended has been fully explained to them, and it is their will, at present, to work on and see whether the bodies can be recovered or not, but the officers, apprehending danger to those working in other lifts as well as to them, may conclude to abandon the work.

This accident is a remarkable one, nothing like it having occurred before in the anthracite coal regions of this State. Any one visiting the mine prior to the accident would have pronounced it one of the safest mines in the region. The pillars were large and regular, the roof strong and safe throughout, as far as appearance indicated. There was no crush, nor anything to create alarm, or to give the least sign of danger. No one suspected that it was possible for danger to exist from quick-sand. The No. 4 tunnel workings

were in the same vein, and higher on the pitch, between this and the outcrop, and had mined nearly one and a half miles further without encountering trouble of this nature. The levelings showed that there were two hundred and sixty-two feet of strata right over the vein at the point where the sand broke in, and it was supposed that about two hundred feet of it was rock. The surface where it broke in was covered by a culm-bank, forty-seven feet high, and this was up on the side of a dry sand-hill, somewhere about sixty or seventy feet above the level of a creek. The rock is seen on the surface above the culm-bank, and also below it at the creek, but between these two points the rock seems to have been washed away to a depth approaching closely to the vein, and again replaced by sand and water. The appearances of the surface are such that no one suspected that such a depth of sand existed there, and, therefore, no one could have foreseen the possibility of such a calamity as that which happened. It was such that no blame can be attached to any one, for every practical precaution was taken to mine the coal so as to insure safety of the mine and the workmen employed.

The names of the entombed persons are: Joseph McCarty, miner, aged twenty-five; Abram Lewis, miner, aged thirty-five; Edward Margraves, miner, aged twenty-two; Oliver Kiveler, miner, aged thirty-two; Frank Kiveler, miner, aged thirty; August Matule, miner, aged forty-five, Isaac Sarver, miner, aged twenty-six; Andrew Low, miner, aged twenty six; Vincent Luke, miner, aged twenty-three; John Nowack, miner, aged twenty-six; John Drajno, miner, aged thirty-five; Edward Mathews, laborer, aged twenty; Thomas Williams, laborer, aged twenty-two; Michael Adomchick, laborer, aged twenty-four; William Kiveler, laborer, aged eighteen; John Shutt, laborer, aged twenty-eight; John Sarver, laborer, aged twenty; John Hawk, laborer, aged twenty-six; Wadislaus Jelgoshinskie, laborer, aged twenty-four; Peter Motulewick, laborer, aged twenty-five; Adam Rubinskey, laborer, aged twenty-six; John Sloff, laborer, aged twenty-seven; William Elkie, runner, aged seventeen; Max Logoskie, driver, aged sixteen; William Donahey, driver, aged fifteen; and Thomas Clifford, door-boy, aged fourteen. Eight of them were married, and they had nineteen children.

Colliery Accidents on the Surface.

Twenty-one serious but non-fatal, and six fatal accidents occurred in the Third district during 1885 on the surface around the collieries. The fatal ones happened as described in the following remarks:

ACCIDENT, No. 10.—George Stonyenke, a loader, was killed February 28, by being crushed between a railroad car and a post, at the No. 5 breaker, Nanticoke. The car was moving slowly, and on approaching the post, he attempted to jump on the car on its side, and was caught.

ACCIDENT, No. 22.—Thomas Hughes, an outside laborer, was fatally injured at the No. 5 breaker, Nanticoke, June 22, 1885. While attempting to

cross the track in front of a moving mine-car, his foot slipped, causing him to fall. The car ran upon him and injured him so that he died in about two hours after.

Accident, No 48.—George Cooper, a laborer, while looking down the No. 2 shaft, Nanticoke, October 7, 1885, the descending cage struck him on his head, killing him instantly.

Accident, No. 57.—Michael Stradinskey, a laborer, while running a loaded railroad car out from the breaker-chutes jumped off in front to go and turn a switch. He fell, and the car ran over him, killing him instantly. This occurred at the Newport breaker, Susquehanna Coal Company, November 9, 1885.

Accident, No. 60.—Jacob Schwab, a loader, at the Stanton breaker, Lehigh and Wilkes-Barre Coal Company, was riding on the front end of a loaded railroad car running out from the breaker, on November 30, 1885. He had an iron bar under his feet, which was projecting out some distance over the side. In passing another car, this caught and caused Schwab to fall on the rail, and the car ran over him. He died within half an hour after.

Accident, No. 63.—Charles Dwyer, a laborer, was instantly killed near the No. 5 breaker, Nanticoke, December 10, 1885. He was standing on the track unnoticed, when a loaded rock-car ran upon him with the result stated. Evidently he did not hear nor see the car approaching him.

A Shocking Accident at the Oak Wood Shaft, Lehigh Valley Coal Company.

On the morning of September 2, 1885, while the men were being lowered to work in this shaft, a shocking accident happened, which caused the death of John J. Martin, a miner; James Kearney, a laborer; Thomas Jenkins and John Peterson, miners. These men, with six others, were on the cage descending the shaft, when, upon reaching the bottom, a large piece of rock loosening from the side of the shaft, several hundred feet above, fell upon the cage, crushing through its roof upon them, killing the first three named instantly, and the other was injured so that he died in a few hours after.

This shaft is seven hundred and thirty feet deep, and the rock became loose on the west side, about midway down, and right below a small vein of coal. In July, the shaft had been very carefully examined, and all loose material found was pulled down or secured by timber. This rock was penetrated by an unseen slip, and a piece weighing about three hundred pounds, disintegrating from the face of this slip, did the fatal work upon these four unfortunate men, who were on the cage at that time.

TABLE No I.—*A list of serious but non-fatal accidents in the Third district of the*

for the year ending

Number.	DATE.	Names of Persons Injured.	Age.	Wife.	Children.	Nationality.	Occupation.	Names of the Collieries.
1	Jan. 2	William T. Jones,	19			Welsh,	Driver,	Dodson,
2	6	Miles Fisher,	17			Irish,	Driver,	No. 2 Slope, Nanticoke,
3	10	Gomer Davies,	14			Welsh,	Helper,	No. 1 Shaft, Nanticoke,
4	12	John Reel,					Driver,	West End,
5	12	James Brinn,	49	1	2	Welsh,	Miner,	Conyngham,
6	20	Daniel Kilroy,	54			Irish,	Miner,	Franklin,
7	Feb. 2	Frank Black,	16			Irish,	Driver,	Diamond,
8	6	David Potts,	40	1	2	Welsh,	Miner,	Hollenback,
9	6	Morgan Whalen,	60			Irish,	Laborer,	No. 1 Breaker, Nanticoke,
10	6	Michael Terry,	38			Irish,	Miner,	Franklin,
11	12	William Higgins,	27			English,	Sinker,	Newport,
12	16	George McNeil,	33	1	1	Hungarian,	Miner,	Alden,
13	17	Charles Rule,	18			English,	Laborer,	No. 4 Slope, Nanticoke,
14	17	John Osmonskey,	23	1		Polish,	Miner,	No. 1 Shaft, Nanticoke,
15	17	Henry Dunstan,	37	1	1	English,	Miner,	Hillman Vein,
16	17	Henry Gribble,	38	1	4	English,	Miner,	do.
17	17	Samuel Jenkins,	32	1	3	English,	Laborer,	do.
18	17	Thomas S. Jones,	25	1	4	Welsh,	Miner,	do.
19	17	Thomas D. Jones,	34	1	3	Welsh,	Miner,	do.
20	17	Daniel Richards,	38	1	7	Welsh,	Fire-boss,	do.
21	17	William Reed,	44	1	3	English,	Miner,	do.
22	17	William Eustice,	38	1	1	English,	Laborer,	do.
23	17	John J. O'Donnell,	35	1	4	Irish,	Miner,	do.
24	17	James Hocking,	23	1	2	English,	Laborer,	do.
25	20	Charles Howells,	36	1	3	English,	Miner,	No. 3 Shaft, Kingston,
26	24	Aug. Gonscoup,	14			Polish,	Door boy,	No. 2 Shaft, Nanticoke,
27	Mar. 5	Michael Ruddy,	14			Irish,	Helper,	Diamond,
28	6	Adam Rockenshey,	25			Polish,	Laborer,	No. 2 Shaft, Nanticoke,
29	9	Frank Lenahan,	55			Irish,	Laborer,	No. 9, Sugar Notch,
30	11	Hiram Waters,	32	1	2	American,	Miner,	Dodson,
31	13	John Mayle,	19			English,	Laborer,	Hartford,
32	13	Moses W. Thomas,					Door boy,	No. 1 Shaft, Nanticoke,
33	20	William Perkins,	18			English,	Driver,	Nottingham,
34	20	Laurence Keuedy,		1		Irish,	Miner,	No. 1 Shaft, Nanticoke,
35	25	Charles Schecterly,	20			American,	Brakeman,	No. 4 Slope, Nanticoke,
36	25	Evan Jones,	25	1	1	American,	Miner,	Avondale,
37	30	William Willie,					Miner,	No. 2 Slope, Nanticoke,
38	30	James Williams,	39			English,	Miner,	No. 4 Slope, Nanticoke,
39	30	George Williams,	33			English,	Laborer,	do. do.
40	April 1	John Lewis,	19			Welsh,	Runner,	No. 1, Red Ash,
41	4	Abraham W. Jones,	29	1	2	Welsh,	Miner,	Parrish Coal Company,
42	6	Michael Verrup,	28	1		Hungarian,	Laborer,	No. 1 Breaker, Kingston,
43	7	Albert Blonsey,	18			English,	Runner,	No. 1 Shaft, Nanticoke,
44	10	Hugh Bennick,	35	1		Irish,	Laborer,	Reynolds,
45	11	Mason Alexander,	16			American,	Driver,	Alden,
46	13	Jenkin Wilde,	23			Welsh,	Laborer,	Grand Tunnel,
47	14	William Chalker,					Laborer,	No. 1 Shaft, Nanticoke,
48	14	Owen Gillespie,	27			Irish,	Miner,	Empire,
49	17	Isaac Askew,	54	1	7	American,	Chute boss,	Nottingham Breaker,
50	18	James Richard,	19			Welsh,	Runner,	No. 2 Shaft, Nanticoke,
51	18	Den. McConglogen,	22			Irish,	Footman,	Franklin,

Anthracite coal fields of Pennsylvania, with remarks on the cause of each accident, December 31, 1885.

Remarks on Extent of Injury and Cause of Accidents.	Explosion of CH4 gas.	Falling of roof and coal.	Falling down shafts.	Crushed by mine cars.	Explosion of powder and blast.	Miscellaneous.	On surface.	Totals.	Number.
Several ribs fractured by falling under cars,				1				1	1
Severely hurt on head and chest by a kick from a mule,						1		1	2
Thigh broken; caught between two cars,				1				1	3
Thigh dislocated and fractured by being jammed between cars,				1				1	4
Back quite badly hurt by a piece of coal falling from rib,		1						1	5
Leg broken near his ankle by a prop falling when rolling it off car,						1		1	6
Arm broken by faling off a mule's back,							1	1	7
Back and ankle hurt by coal flying from a blast,					1			1	8
Foot crushed under railroad cars: had to be amputated,							1	1	9
Left leg broken by coal rushing upon him,		1						1	10
Struck on head by a stone which fell from side of shaft,						1		1	11
Severe scalp wound caused by a fall of coal,		1						1	12
Face and hands burned by an explosion of gas,	1							1	13
Face, hands, and upper part of body severely burned by an explosion of gas,	1							1	14
Face and hands burned, (These persons were all injured at the same time in the Hillman seam, east of the tunnel. About 10 o'clock, A. M., one of the journals of the ventilating fan heated, causing the fan to retard its speed and finally stop for about two minutes. As soon as the fan was noticed to retard speed, Wm. Enstice was sent to call the men out, but the gas accumulated rapidly, and ignited from some one's lamp, causing a terrific explosion just as he was going in the gangway. James Solomon was killed and John D. Jones was fatally burned.)	1							1	15
Face and hands burned,	1							1	16
Face and hands burned,	1							1	17
Face and hands severely burned,	1							1	18
Face and hands severely burned,	1							1	19
Thigh and arm broken,	1							1	20
Slightly burned and bruised,	1							1	21
Severe scalp wound,	1							1	22
Compound fracture of elbow,	1							1	23
Face and hands slightly burned,	1							1	24
Leg and shoulder severely bruised by a fall of rock,		1						1	25
Leg broken by falling upon a T rail while playing,						1		1	26
Leg broken by running down the inclined plane and falling,						1		1	27
Severely cut on leg; done by a piece of slate falling on it,		1						1	28
Ankle bruised and finger severely cut by a fall of rock,		1						1	29
Seriously injured by a premature blast,					1			1	30
Slightly hurt by coal rolling upon him,						1		1	31
Fell asleep on the track; car ran over his hand and crushed it so that it had to be amputated,					1			1	32
Broke his arm by wrestling with another boy,						1		1	33
Side and head severely injured by a premature blast fired by ramming a tight cartridge into a hole,					1			1	34
Severely scalded about lower limbs: the blowing-off cock on locomotive broke, letting the steam blow upon him in large volume,							1	1	35
Foot crushed and slight cut on head by fall of coal,		1						1	36
Ankle dislocated by being struck with the rope,						1		1	37
Slightly burned on faces and hands by an explosion of gas, caused by disobeying orders of the mine-boss regarding naked lights,	1							1	38
	1							1	39
Thigh bruised and two fingers cut by a car running over him,				1				1	40
Right leg broken by coal flying from a blast,					1			1	41
Leg broken by a stone sliding upon him while digging wall foundation,							1	1	42
Toe crushed and had to be amputated; car ran over it,				1				1	43
Face and hands slightly burned by an explosion of gas,	1							1	44
Leg broken and collar-bone fractured by being caught between cars,				1				1	45
Flesh wounds on back, arm, and leg, caused by a fall of coal,		1						1	46
Three ribs fractured, leg bruised, and cut on arm by a fall of coal,		1						1	47
Painfully injured by a blast, which was fired while he was withdrawing tamping,					1			1	48
Eye seriously hurt by a piece of steel flying into it,							1	1	49
Leg broken by being squeezed between two cars,				1				1	50
Left arm broken by a runaway car; coupling broke on slope,				1				1	51

TABLE No. I.—

Number.	Date.	Names of Persons Injured.	Age.	Wife.	Children.	Nationality.	Occupation.	Names of the Collieries.
52	April 22	William Keiler, . .	16	. .	. .	American,	Driver, ...	No. 1 Shaft, Nanticoke, . .
53	23	Hugh McGwartz, .	20	. .	. .	Irish, . .	Driver, ...	Stanton, ...
54	May 1	Frank Schappert, .	25	. .	. .	Polish, . .	Laborer, . . .	No. 1 Shaft, Nanticoke, . .
55	1	James Kelbey, . . .	53	1	3	Irish, . .	Miner, ...	Gaylord, ...
56	4	Fred. Boker, . . .	26	. .	. .	Polish, . .	Laborer, . . .	No. 2 Shaft, Nanticoke, . .
57	4	Peter Gorham, . .	50	1	. .	Irish, . .	Miner, ...	Hartford, ...
58	4	David Smith, . . .	54	. .	. .	Welsh, . .	Miner, ...	Stanton, ...
59	5	Charles Drew, . . .	. .	. .	. .	. . . . .	Miner, ...	No. 4 Slope, Nanticoke, . .
60	5	Clarence Cope, . .	28	1	. .	American,	Carpenter, . .	Newport, ...
61	12	John Scott, ...	45	1	3	Irish, . .	Pump-man, .	Franklin, ...
62	16	Thos. O'Flaherty,	31	1	4	Irish, . .	Laborer, . . .	No. 5, Plymouth, ...
63	19	John C. Thomas, .	27	1	1	Welsh, . .	Runner, . . .	Stanton, ...
64	19	Henry Gwinn, . . .	15	. .	. .	American,	Driver, ...	No. 1 Slope, Nanticoke, . .
65	23	Mike Como, ...	20	. .	. .	Hungarian,	Driver, ...	No. 2 Breaker, Kingston, .
66	23	James Boyd, ...	. .	1	. .	Irish, . .	Miner, ...	No. 2 Shaft, Nanticoke, . .
67	25	Thos. Llewellyn, .	17	. .	. .	Welsh, . .	Driver, ...	No. 3, Plymouth, ...
68	25	Frank Shunofskey,	. .	1	. .	Polish, . .	Laborer, . . .	No. 2 Shaft, Nanticoke, . .
69	27	George C. Smith, .	19	. .	. .	American,	Laborer, . .	No. 1 Shaft, Nanticoke, . .
70	27	Charles Barnett, . .	15	. .	. .	American,	Slate-picker, .	Salem Breaker, ...
71	June 2	Frank Black, . . .	16	. .	. .	Irish, . .	Driver, ...	Diamond, ...
72	10	W. N. Roberts, . .	28	. .	. .	Welsh, . .	Laborer, . . .	Dodson, ...
73	10	Fred. Loskoskey, .	22	. .	. .	German, .	Miner, ...	No. 4 Slope, Nanticoke, . .
74	11	Pat. Gowin, ...	45	1	5	Irish, . .	Miner, ...	Stanton, ...
75	13	Gustav Gannel, . .	27	1	2	German, .	Laborer, . . .	No. 1 Shaft, Nanticoke, . .
76	13	Thomas Drury, . .	35	1	4	Irish, . .	Miner, ...	Hillman Vein, ...
77	17	Thomas Davies, . .	14	. .	. .	Welsh, . .	Driver, ...	No. 2 Slope, Nanticoke, . .
78	17	John Allen, ...	37	1	4	English, .	Miner, ...	Lance, No. 11, ...
79	18	Ed. Delaney, . . .	20	. .	. .	Irish, . .	Runner, . . .	Avondale, ...
80	20	John B. Cotterale,	35	1	. .	Irish, . .	Miner, ...	Hartford, ...
81	20	Peter P. Jones, . .	35	1	. .	Welsh, . .	Miner, ...	Empire, ...
82	23	John Oshinskey, . .	27	1	. .	Polish, . .	. . . . .	No. 1 Shaft, Nanticoke, . .
83	23	Barney Lyons, . . .	29	. .	. .	Irish, . .	Laborer, . . .	Diamond, ...
84	July 1	Wm. McNilus, . . .	42	1	4	Irish, . .	Miner, ...	Stanton, ...
85	1	Robert Moyer, . . .	40	1	3	American,	Miner, ...	West End Tunnel, ...
86	8	Joseph Ross, ...	35	. .	. .	Italian, .	Laborer, . . .	Nottingham, ...
87	9	Moses Lewton, . .	15	. .	. .	English, .	Door boy, . .	No 2 Shaft, Kingston, . . .
88	20	John Toole, ...	20	. .	. .	Irish, . .	Driver, ...	Stanton, ...
89	21	Peter Connolly, . .	43	. .	. .	Irish, . .	Miner, ...	Avondale, ...
90	21	Powell Bowski, . .	45	1	5	Polish, . .	Miner, ...	Hartford, ...
91	22	John Hern, ...	30	1	3	English, .	Laborer, . . .	No. 4 Slope, Nanticoke, .
92	22	Hopkin Williams, .	32	1	. .	Welsh, . .	Machinist, . . .	
93	27	Hugh Parker, . . .	. .	. .	. .	. . . . .	Miner, ...	Chauncey, ...
94	29	William Coombs, .	35	1	. .	. . . . .	Laborer, . . .	No. 1 Shaft, Nanticoke, . .
95	29	John McAndrews, .	45	. .	. .	Irish, . .	Miner, ...	Hollenback, ...
96	Aug. 3	Lewis Merrifield, .	43	1	4	English, .	Miner, ...	Reynolds, ...
97	4	Jacob Ogan, ...	21	. .	. .	American,	Laborer, . . .	Wanamie, ...
98	5	Ed. McGinness, . .	50	1	7	Irish, . .	Miner, ...	Hollenback, ...
99	12	Pat. McGowan, . .	50	1	6	Irish, . .	Miner, ...	No. 9, Sugar Notch, ...
100	12	Barney Toole, . . .	50	1	3	Irish, . .	Engineer, . .	Hillman Vein, ...
101	15	Thos. H. Hughes, .	53	1	. .	Welsh, . .	Miner, ...	No. 4 Slope, Nanticoke, . .
102	17	Thomas Tracey, . .	26	. .	. .	Irish, . .	Miner, ...	No. 9, Sugar Notch, . . .
103	17	Rodger Edmunds, .	32	1	1	Welsh, . .	Laborer, . . .	
104	21	Frank Serinski, . .	34	1	. .	Polish, . .	Laborer, . . .	No. 2 Slope, Nanticoke, . .
105	22	John Trevor, . . .	21	. .	. .	Welsh, . .	Miner, ...	No. 1 Shaft, Nanticoke, . .
106	24	John B. Thomas, .	30	1	. .	Welsh, . .	Miner, ...	Stanton, ...
107	25	Anthony Oburst, .	15	. .	. .	German, .	Door boy, . .	Hollenback, ...
108	25	William Brown, . .	26	. .	. .	Irish, . .	Miner, ...	No. 1 Shaft, Nanticoke, . .
109	25	Neil Conway, . . .	29	1	3	Irish, . .	Miner, ...	No. 9, Sugar Notch, ...
110	28	William Fitzer, . .	19	. .	. .	American,	Miner, ...	Dodson, ...
111	28	James Giles, ...	38	1	4	English, .	Miner, ...	Conyngham, ...

Continued.

Remarks on Extent of Injury and Cause of Accidents.	Explosion of C H4 gas.	Falling of roof and coal.	Falling down shaft.	Crushed by mine cars.	Explosion of powder and blasts.	Miscellaneous.	On surface.	Totals.	Number.
Thigh broken and hip sprained; his foot caught in a frog and car ran upon him,				1				1	52
Severely kicked by a mule; recovered all right,						1		1	53
Face and hands slightly burned by an explosion of gas,	1							1	54
Thigh broken by coal flying from a blast; he cut the match too short,					1			1	55
Leg broken; mule pulled a car upon him while trying to place it on the track,				1				1	56
Collar bone fractured and severe wound on chest by a fall of coal,		1						1	57
Leg crushed between cars; amputated after at the hospital,				1				1	58
Face and hands burned by an explosion of gas,	1							1	59
Leg broken by a tree falling upon him,							1	1	60
Left leg broken; a car ran against a piece of timber, causing it to strike his leg and breaking it,						1		1	61
Leg broken by coal sliding upon it from top of bottom bench,		1						1	62
Painfully bruised around body; caught between car and side,				1				1	63
Head badly cut and shoulder-blade fractured by falling under a car,				1				1	64
Leg crushed between two culm cars,							1	1	65
Face, back, and hands burned by an explosion of gas,	1							1	66
Leg broken; car jumped track and squeezed him against another car,				1				1	67
Face and hands burned by an explosion of gas,	1							1	68
Three fingers cut off by a circular saw,							1	1	69
Right arm shockingly lacerated and bone fractured by being caught in the rolls,							1	1	70
Hip dislocated by falling from a mule's back,							1	1	71
Leg broken by a fall of rock,		1						1	72
Leg broken at ankle by a fall of roof; Alex. Bonage was slightly hurt the same time,		1						1	73
Hip fractured and body bruised by a fall of coal,		1						1	74
Skull fractured by a blast bursting through pillar; he recovered all right,					1			1	75
Face and hands burned by an explosion of gas,	1							1	76
Leg broken; stretcher caught him and he was thrown under a car,					1			1	77
Arm broken at wrist by a piece of rock falling on it,		1						1	78
Leg crushed below knee by cars running over him on the plane,							1	1	79
Three fingers crushed by coal in the chute,						1		1	80
Face and hands burned by an explosion of gas,	1							1	81
Face and hands severely burned by an explosion of gas,	1							1	82
Hips and urethra badly injured by a fall of rock,		1						1	83
Severe flesh wounds on head, back, and legs by a premature blast,					1			1	84
Leg broken by a fall of slate,		1						1	85
Severely injured by falling into the shaft after the cage,			1					1	86
Leg broken; jammed between a car and door,				1				1	87
Hips badly injured by being squeezed between car and rib,				1				1	88
Several ribs fractured by a fall of rock,		1						1	89
Arms and back painfully bruised and severely cut on forehead by a premature blast, he having cut the match too short,					1			1	90
Severely cut and bruised by runaway cars on slope; the hitching plate broke, leaving a trip of cars run down the slope,				1				1	91
				1				1	92
Right arm broken by coal flying from a blast,					1			1	93
Left leg broken near ankle by a car running upon him,				1				1	94
Collar bone fractured and severely wounded on head by a premature blast,					1			1	95
Body painfully bruised by a fall of rock,		1						1	96
Painfully hurt; caught between car and prop,				1				1	97
Severely injured by a fall of coal. His laborer, Thos. Hennerty, was killed the same time,		1						1	98
Severely injured on body and head by a fall of coal,		1						1	99
Severely scalded by a boiler explosion,							1	1	100
Face and hands burned by an explosion of gas,	1							1	101
Both were burned by an explosion of gas while working together,	1							1	102
	1							1	103
Seriously cut near his eye by falling upon a piece of coal,						1		1	104
Two ribs fractured by a runaway car,				1				1	105
Severely injured by falling from a wheeling platform,						1		1	106
Hips painfully injured by being jammed between cars,				1				1	107
Leg and body bruised by a blast,					1			1	108
Face, hands, and neck burned by an explosion of gas,	1							1	109
Severe scalp wound by a premature blast,					1			1	110
Two ribs fractured; back bruised and nose cut by fall of coal,		1						1	111

TABLE No. I.

Number.	Date.	Names of Persons Injured.	Age.	Wife.	Children.	Nationality.	Occupation.	Names of the Collieries.
112	Aug. 31	Lewis Parry,	25	1	..	Welsh, ..	Miner,	
113	31	Charles Granville,	21	..	..	English, .	Laborer,	No. 4 Slope, Nanticoke, ..
114	31	Richard Rule,	30	..	..	English, .	Miner,	
115	31	William James,	28	..	..	Welsh, ..	Miner,	
116	Sept. 5	John O'Donnell,	20	..	..	Irish, ...	Laborer,	Dodson,
117	10	John Furguskey,	22	..	..	Polish, ..	Laborer,	No. 1 Shaft, Nanticoke, ..
118	10	James Leonard,	30	1	4	Irish, ...	Miner,	Conyngham,
119	11	Peter Summers,	35	1	3	.....	.....	Dodson,
120	14	Frank Gomonski,	17	..	..	Polish, ..	Brakeman,	No. 4 Tunnel, Nanticoke, .
121	15	Pat. Brennen,	25	..	..	Irish, ...	Laborer,	No. 4 Slope, Nanticoke, ..
122	16	Pat. Conyngham,	21	..	..	American,	Laborer,	Baltimore Slope,
123	17	Michael Frank,	21	..	..	Hungarian,	Laborer,	Gaylord,
124	Oct. 5	John Samuels,	17	..	..	Welsh, ..	Driver,	No. 2, Red Ash,
125	6	Condy O'Donnell,	31	..	..	Irish, ...	Miner,	Conyngham,
126	8	David J. Jones,	29	1	1	Welsh, ..	Track-layer,	Hillman Vein,
127	10	O. E. Rider,	..	..	..	.....	Miner,	Salem,
128	13	Anthony Lavan,	15	..	..	Irish, ...	Driver,	Diamond,
129	15	George Worwick,	25	..	..	Hungarian,	Laborer,	No. 2 Slope, Nanticoke, ..
130	15	James Adams,	15	..	..	Welsh, ..	Door-boy,	No. 2 Slope, Nanticoke, ..
131	20	Joseph Trenoskey,	25	..	..	Polish, ..	Laborer,	No. 1 Shaft, Nanticoke, ..
132	21	Henry Powell,	26	1	..	English, .	Miner,	
133	21	John Makoskey,	23	..	..	Polish, ..	Laborer,	No. 1 Shaft, Nanticoke, ..
134	21	Matthew Marshon,	23	..	..	Polish, ..	Laborer,	
135	21	Joseph Thomas,	25	..	..	Welsh, ..	Machinist,	
136	21	David Grimes,	30	..	..	Irish, ...	Machinist,	
137	21	John Woods,	27	1	1	American,	Machinist,	
138	21	Sandy Love,	28	..	..	American,	Laborer,	
139	21	John Lovitzkey,	31	..	2	Polish, ..	Laborer,	
140	21	John Zeliuskey,	25	..	..	Polish, ..	Laborer,	No. 2, Plymouth,
141	21	Edward F. Jones,	45	1	4	Welsh, ..	Laborer,	
142	21	Thos. McDermott,	30	1	5	Irish, ...	Laborer,	
143	21	Thomas Howard,	35	1	3	Irish, ...	Miner,	
144	21	John Cobley,	52	1	4	English, .	Miner,	
145	22	Patrick McGuire,	61	1	..	Irish, ...	Miner,	No. 1 Shaft, Nanticoke, ..
146	22	Gwilym Evans,	13	..	..	Welsh, ..	Slate-picker,	No. 2 Breaker, Kingston, .
147	26	Condy Fisher,	50	..	..	Irish, ...	Miner,	Warrior Run,
148	Nov. 3	John D. Beddow,	38	1	..	Welsh, ..	Miner,	
149	3	Frank Knoskey,	25	..	..	Polish, ..	Laborer,	No. 1 Shaft, Nan icoke, ..
150	3	John Kriofoskey,	19	..	..	Polish, ..	Laborer,	
151	3	Thomas Jones,	16	..	..	Welsh, ..	Driver,	No. 5, Plymouth,
152	4	Conrad German,	16	..	..	American,	Driver,	No. 2 Shaft, Nanticoke, ..
153	4	Christian Dietz,	37	1	3	German, .	Miner,	No. 4, Plymouth,
154	6	John Gobber,	30	1	1	Hungarian,	Laborer,	No. 3, Kingston,
155	7	James Brennen,	30	1	4	Irish, ...	Miner,	No. 9, Sugar Notch,
156	12	Patrick Scott,	24	..	..	Irish, ...	Laborer,	Lance, No. 11,
157	12	Frank Froski,	30	..	..	Polish, ..	Miner,	No. 9, Sugar Notch,
158	13	Anthony Brennen,	37	1	2	Polish, ..	Miner,	No. 2 Shaft, Nanticoke, ..
159	19	James Reede,	34	..	..	Scotch, ..	Laborer,	Grand Tunnel,
160	27	Wm. J. Evans,	15	..	..	American,	Driver,	Conyngham,
161	28	Simon Savage,	28	..	..	Polish, ..	Miner,	No. 1 Slope, Nanticoke, ..
162	30	Cornelius Boyle,	24	..	..	Irish, ...	Stable-boss,	Hillman Vein,
163	Dec. 2	Thomas Hayes,	17	..	..	American,	Loader,	Hollenback,
164	3	William Ranson,	39	1	4	American,	Miner,	No. 4 Slope, Nanticoke, ..
165	4	Robert John,	34	1	4	Welsh, ..	Miner,	Lance, No. 11,
166	4	Sam'l R. Van Horn,	17	..	..	American,	Runner,	Newport,
167	10	Humphrey Hughes,	20	..	..	Welsh, ..	Miner,	Gaylord,
168	12	John Monaghan,	32	1	1	American,	Laborer,	Frankford,
169	15	James Lewis,	25	..	..	Welsh, ..	Laborer,	No. 2 Shaft, Nanticoke, ..
170	16	Thos. McKenna,	..	..	..	.....	Miner,	West End,
171	18	Michael Dumask,	26	1	2	Hungarian,	Laborer,	No. 5, Plymouth,
172	19	Thos. McMannus,	40	..	..	Irish, ...	Miner,	Franklin,
173	21	John H. Williams,	13	..	..	Welsh, ..	Slate-picker,	No. 2, Red Ash,
174	23	Patrick McDade,	40	1	3	Irish, ...	Miner, ..	Diamond,
175	28	Peter Gallagher,	30	..	..	Irish, ...	Miner,	Diamond,
176	28	Thomas Pritchard,	26	1	..	Welsh, ..	Miner,	No. 1, Red Ash,
177	29	Charles Roth,	17	..	..	American,	Laborer,	Diamond,
178	31	Robert Rubery,	14	..	..	American,	Driver,	No. 2 Breaker, Nanticoke,

One hundred and seven accidents were reported as only very slight injuries, which are not included in eighty-five (285.)

Continued.

Remarks on Extent of Injury and Cause of Accidents.	Explosion of C H4 gas.	Falling of roof and coal.	Falling down shaft.	Crushed by mine cars.	Explosion of powder and blasts.	Miscellaneous.	On surface.	Totals.	Number.
Parry and Granville were severely burned on their hands and faces, and the other two slightly burned on their faces and hands; gas accumulated at an unexpected point, and when going to work it exploded, burning them as stated,	1							1	112
	1							1	113
	1							1	114
	1							1	115
Compound fracture of leg by a premature blast,					1			1	116
Leg broken by a fall of roof,		1						1	117
Mining-needle ran through his thigh; fell while running with it,						1		1	118
Left foot fractured by a fall of coal,		1						1	119
Right leg broken; caught between two cars,							1	1	120
Left foot cut off, and right one bruised by fall of rock,		1						1	121
Leg broken by a fall of coal,		1						1	122
Arm broken by a fall of coal; amputated,		1						1	123
Leg crushed by falling under a car; amputated,				1				1	124
Thigh and arm broken by a fall of coal,		1						1	125
Two ribs fractured by being squeezed between car and door-post,				1				1	126
Side painfully bruised by a premature blast,					1			1	127
Spine injured, and two ribs broken by falling under a culm car,							1	1	128
Face and hands slightly burned by an explosion of powder,					1			1	129
Skull slightly fractured by being swung from a car against the rib,						1		1	130
Leg broken by a fall of slate,		1						1	131
Faces and hands burned by an explosion of gas; they brushed the gas upon their naked lights and exploded it,	1							1	132
	1							1	133
	1							1	134
All these were severely burned by an explosion of gas, in the No. 2 shaft, Plymouth. There were six others fatally burned the same time. For further particulars of the accident, see another part of this report,	1							1	135
	1							1	136
	1							1	137
	1							1	138
	1							1	139
	1							1	140
	1							1	141
	1							1	142
	1							1	143
	1							1	144
Arm broken and side bruised by coal flying from a blast,					1			1	145
Flesh lacerated on arm; caught in a screen,							1	1	146
Leg broken by a fall of coal,		1						1	147
These three were painfully burned by an explosion of gas; they were timbering at the face of gangway; a rush of coal brought the gas down on their lamps from a hole above the timber,	1							1	148
	1							1	149
	1							1	150
Arm broken; falling while unhitching his mule,						1		1	151
Arm broken by being kicked by a mule,						1		1	152
Three ribs fractured and nose bruised; squeezed between car and rib,				1				1	153
Painfully hurt by a fall of rock,		1						1	154
Leg broken by a fall of coal,		1						1	155
Ankle dislocated by coal falling on it,		1						1	156
Face and hands burned by an explosion of gas,	1							1	157
Arm broken and slightly hurt about hips by a fall of rock,		1						1	158
Face slightly, hands and arms severely, burned by explosion of gas,	1							1	159
Elbow fractured, back and side slightly bruised by explosion of gas,	1							1	160
Leg broken; caught between car and rib,				1				1	161
Big toe fractured by being caught under the cage,						1		1	162
Painfully injured by being jammed between cars,							1	1	163
Face and hands severely burned by an explosion of gas,	1							1	164
Seriously injured by a premature blast,					1			1	165
Leg severely crushed between two cars,							1	1	166
Face and hands slightly burned by an explosion of gas,	1							1	167
Left arm broken; caught between railroad cars,							1	1	168
Arm broken; fall of slate caused him to fall on the teeth of a rake,		1						1	169
Leg broken by a piece of timber falling on it,						1		1	170
Severely cut on back by a fall of coal,		1						1	171
Face and hands burned by an explosion of gas,	1							1	172
Hip dislocated and hand bruised; caught between car and post,							1	1	173
Two legs broken by a fall of roof,		1						1	174
Leg broken and back hurt by fall of coal,		1						1	175
Eye destroyed by a piece of coal flying into it from the drill,						1		1	176
Arm broken and flesh lacerated by railroad car running upon it,							1	1	177
Leg broken; struck by the rope at foot of plane,							1	1	178
	52	38	1	26	20	20	21	178	

the above list; adding which increases the total number of non-fatal accidents to two hundred and

TABLE No. I.—*A list of serious but non-fatal accidents in the Second District of* *dent, for the year end-*

Number.	DATE.	Names of Persons Injured.	Age.	Wife.	Children.	Nationality.	Occupation.	Names of the Collieries.
1	Jan. 3	William Amos, . . .	50	1	. .	Welsh, . .	Fire boss, . .	Midvale Slope, ...
2	3	Lewis Thomas, . .	. .	. .	. .	Welsh, . .	Miner, ...	
3	6	John Edwards, . .	37	1	1	Welsh, . .	Miner, ...	Wyoming, ...
4	9	Stephen Treverton,	22	. .	. .	English, .	Laborer, . . .	Exeter, ...
5	17	Thomas Price, . . .	16	. .	. .	American,	Oiler, ...	East Boston, ...
6	Feb. 6	John Gallagher, . .	13	. .	. .	Irish, . .	Door boy, . .	Pine Ridge, ...
7	6	Frank Harlick, . .	23	. .	. .	Turkish, .	Laborer, . . .	East Boston, ...
8	16	H. C. Johnson, . .	33	1	. .	American,	Mine boss, . .	Forty Fort, ...
9	Mar. 3	James Cochlin, . .	27	1	1	Irish, . .	Miner, ...	Harry E., ...
10	3	Samuel Marsh, . .	18	. .	. .	English, .	Laborer, . . .	do. . . . .
11	7	John Heffron, . . .	45	1	7	Irish, . .	Miner, ...	Schooley, ...
12	7	James Brennen, . .	23	. .	. .	Irish, . .	Miner, ...	do. . . . .
13	10	Thomas Hughes, .	. .	. .	. .	Irish, . .	Laborer, . . .	Henry, ...
14	10	Patrick Haley, . . .	. .	. .	. .	Irish, . .	Miner, ...	do. . . . .
15	12	James Smith, . . .	50	1	7	American,	Laborer, . . .	Wyoming, ...
16	18	Andrew Golas, . . .	22	. .	. .	Polish, . .	Laborer, . . .	do. . . . .
17	21	Thomas Cummings,	42	1	7	English, .	Miner, ...	Bennett, ...
18	21	Owen R. Jones, . .	45	1	7	Welsh, . .	Footman, . .	Wyoming, ...
19	April 3	Joseph Hayward, .	42	1	2	English, .	Sinker, . . .	Mill Creek Shaft, ...
20	3	Samuel Morris, . .	43	1	5	English, .	Sinker, . . .	do. do. . . . .
21	23	William Skidmore,	32	1	. .	English, .	Fire boss, . .	Bennett, ...
22	23	Andrew Barnett, . .	29	. .	. .	American,	Assistant, . . .	
23	25	James Bosker, . . .	20	. .	. .	American,	Footman, . .	Pine Ridge, ...
24	28	Henry Banta, . . .	35	1	3	American,	Miner, ...	Forty Fort, ...
25	May 4	Michael Jessup, . .	23	1	. .	Hungarian,	Laborer, . . .	Wyoming, ...
26	4	Patrick Brennen, .	26	. .	. .	Irish, . .	Laborer, . . .	do. . . . .
27	12	George Pastin, . . .	38	1	3	Hungarian,	Laborer, . . .	Prospect, ...
28	19	Joseph Dailey, . . .	10	. .	. .	Irish, . .	Slate-picker, .	East Boston, ...
29	27	Benjamin Sherer, .	17	. .	. .	American,	Driver, ...	Mineral Springs, ...
30	27	John Conovan, . . .	17	. .	. .	Irish, . .	Driver, ...	Laurel Run, ...
31	30	E. D. Denniston, .	60	1	. .	American,	Outside boss, .	Harry E., ...
32	June 15	William Porter, . .	56	1	6	English, .	Miner, ...	East Boston, ...
33	15	Thomas Harris, . .	47	1	6	Welsh, . .	Miner, ...	Pine Ridge, ...
34	17	James Laggin, . . .	29	1	. .	Irish, . .	Miner, ...	Wyoming, ...
35	17	John Gray, ...	35	. .	. .	Irish, . .	Laborer, . . .	
36	July 10	Evan Thomas, . . .	28	1	1	Welsh, . .	Miner, ...	Mineral Spring, ...
37	20	Mordecai Jones, . .	16	. .	. .	American,	Driver, ...	Wyoming, ...
38	21	Bryant Berry, . . .	23	. .	. .	Irish, . .	Runner, . . .	do. . . . .
39	25	Thos. McCormick, .	55	1	2	Irish, . .	Miner, ...	do. . . . .
40	27	Patrick Boyle, . . .	23	. .	. .	Irish, . .	Laborer, . . .	Forty Fort, ...
41	30	Sandy Porter, . . .	. .	1	6	English, .	Miner, ...	Fuller Colliery, ...
42	Aug. 5	Christian Conyard,	. .	1	1	Irish, . .	Laborer, . . .	Prospect, ...
43	12	Patrick Hughes, . .	14	. .	. .	Irish, . .	Door boy, . .	Henry, ...
44	21	Patrick Mulligan, .	17	. .	. .	Irish, . .	Driver, ...	Laurel Run, ...
45	26	Timothy Kinney, .	25	. .	. .	Irish, . .	Miner, ...	Enterprise, ...
46	29	William Metzgar, .	12	. .	. .	American,	Slate picker, .	Laurel Run, ...
47	Sep. 11	Alex. Meriskey, . .	26	. .	. .	Polish, . .	Laborer, . . .	East Boston, ...
48	12	Thomas Heckard, .	17	. .	. .	English, .	Door boy, . .	Schooley, ...
49	14	Charles Reed, . . .	20	. .	. .	English, .	Laborer, . . .	Harry E., ...
50	15	James Farrell, . . .	15	. .	. .	American,	Driver, ...	East Boston, ...
51	26	John Waverka, . .	35	1	. .	German, .	Miner, ...	Black Diamond, ...
52	Oct. 9	James Broderick, .	19	. .	. .	Irish, . .	Laborer, . . .	Harry E., ...
53	16	Frank Naffosky, . .	45	1	. .	German, .	Miner, ...	Forty Fort, ...
54	19	Jos. Wescompsey, .	24	1	. .	Polish, . .	Laborer, . . .	Schooley, ...
55	26	James Mackin, . .	19	. .	. .	Irish, . .	Laborer, . . .	do. . . . .

The above accidents occurred in mines of that portion of the Second district which, under the old law, of an inspector for the Second district In addition to the above list, there were 27 reported as being

the Anthracite coal fields of Pennsylvania, with remarks on the cause of each accident during December 31, 1885.

Remarks on Extent of Injury and Cause of Accidents.	Explosion of CH_4 gas.	Falling of roof and coal.	Falling down shafts.	Crushed by mine cars.	Explosion of powder and blasts	Miscellaneous.	On surface.	Totals.	Number.
Both were painfully burned on faces and hands by an explosion of gas; David Roberts was fatally burned at the same time,	1							1	1
	1							1	2
Skull slightly fractured and body hurt by a fall of coal,		1						1	3
Several ribs broken and hip injured by a fall of black rock,		1						1	4
Two fingers crushed by being caught between car bumpers,				1				1	5
Thigh broken by a runaway car which ran upon him,				1				1	6
Severe scalp wound; struck by a piece of falling coal,		1						1	7
Spine dislocated; caught between cage and buntin in shaft,						1		1	8
Hips and limbs painfully bruised by a fall of rock,		1						1	9
Hips and limbs injured by the same fall of rock,		1						1	10
Leg broken by a fall of rock,		1						1	11
Leg broken by the same fall of rock,		1						1	12
Injured about his face and head by a fall of rock,		1						1	13
Back injured by a fall of rock,		1						1	14
Foot severely bruised and slight cut on head by a fall of rock,		1						1	15
Foot crushed; caught in frog till the car ran over it,				1				1	16
Painfully injured by a fall of rider coal,		1						1	17
Foot badly hurt by being caught under the cage,						1		1	18
Arm broken in two places, A plank was struck loose in the shaft by a buntin, which was lowered, and it struck these men at the bottom.						1		1	19
Shoulder bone fractured,						1		1	20
Painfully burned on faces and hands by an explosion of gas,	1							1	21
which occurred while they were examining old workings,	1							1	22
Little finger cut off by spragging a car,				1				1	23
Face and arms severely burned by an explosion of powder,					1			1	24
Both burned on faces and hands by an explosion of gas; the laborer neglected to close the check-door when pushing a car through, causing gas to accumulate and fire from their lamps,	1							1	25
	1							1	26
Left arm broken by coupling culm cars,							1	1	27
Hand crushed in cog-wheels,							1	1	28
Leg broken; partition between chutes in breaker fell on him,							1	1	29
Collar-bone fractured by being squeezed between a car and mule,				1				1	30
Hip-bone fractured; caught between cars,							1	1	31
While pushing a car, he fell on track and broke his arm,						1		1	32
Arm broken and face bruised by a premature blast,					1			1	33
While tamping a hole the powder fired, bruising and cutting them quite badly,					1			1	34
					1			1	35
Leg broken in two places and body injured by a fall of roof,		1						1	36
Arm broken; caught between cars,				1				1	37
Hand severely injured by a car running over it,				1				1	38
Foot severely crushed by a fall of coal,		1						1	39
Leg broken by a fall of coal,		1						1	40
One rib fractured and body slightly bruised by a fall of rock,		1						1	41
Left leg broken by a piece of rock sliding on it,						1		1	42
Leg broken by a fall of rock,		1						1	43
Severely injured by falling under a car,							1	1	44
He cut his thumb off with an ax while making a wedge,						1		1	45
Two fingers cut off by meddling with blowing machine in the blacksmith shop,							1	1	46
Toes all cut off one foot by being caught under a descending cage,						1		1	47
Two ribs and one arm fractured by falling under a car,				1				1	48
Head and foot painfully injured by a fall of coal,		1						1	49
Wrist broken by falling from a mule's back,						1		1	50
Leg broken by coal flying from a blast,					1			1	51
Thigh broken and body bruised by a fall of rock,		1						1	52
Collar-bone fractured and cut on face by a fall of coal,		1						1	53
Leg broken by a fall of black rock,		1						1	54
Arm broken between cars,				1				1	55
	6	20	..	9	5	9	6	55	

was in the Middle district of Luzerne and Carbon counties. They occurred prior to the appointment only slightly injured, adding which would make a total of 82.

TABLE No. II.—*A list of accidents resulting in death in the Third district of the for the year ending*

Number.	DATE.	Names of Persons Killed.	Age.	Widows.	Orphans.	Nationality.	Occupation.	Names of the Collieries.
1	Jan. 8	Frank Skivitzky, .	20	.	.	Polish, . .	Driver, ...	No. 1 Slope, Nanticoke, . .
2	9	Lewis Derr, ...	22	.	.	Polish, . .	Miner, ...	Nottingham, ...
3	16	Paul Polinsky, . . .	27	.	.	Polish, . .	Laborer, . . .	No. 2 Shaft, Nanticoke, . .
4	20	Thomas Smith, . .	35	1	5	English, .	Engineer, . .	Stanton, ...
5	26	Daniel Eagan, . . .	24	.	.	Irish, . .	Sinker, . . .	Woodward, No. 1, ...
6	Feb. 3	Enoch Jones, . . .	23	.	.	Welsh, . .	Driver, ...	Lance, No. 11, ...
7	7	John Hennesy, . .	33	1	3	Irish, . .	Miner, ...	Avondale, ...
8	17	James Solomon, . .	55	1	.	English, .	Laborer, . . .	Hillman Vein, ...
9	17	John D. Jones, . .	30	.	.	Welsh, . .	Laborer, . . .	Hillman Vein, ...
10	28	George Stonyenke,	30	1	2	Hungarian,	Loader, . . .	No. 5 Breaker, Nanticoke,
11	Mar. 20	Michael Haley, . .	45	1	4	Irish, . .	Miner, ...	Gaylord, ...
12	April 6	Vincent Folliefsky,	40	.	.	Polish, . .	Miner, ...	No. 2 Shaft, Nanticoke, . .
13	13	Michael St. John, .	28	1	1	Irish, . .	Sinker, . . .	Woodward, No. 1, ...
14	15	Frank Dinany, . . .	16	.	.	Irish, . .	Driver, ...	Nottingham, ...
15	23	George Williams, .	21	1	1	English, .	Sinker, ...	South Wilkes-Barre, ...
16	23	John Williams, . .	38	1	6	English, .	Miner, ...	Lance, No. 11, ...
17	May 26	John Tabosky, . . .	25	.	.	Hungarian,	Laborer, . . .	Nottingham, ...
18	June 4	Frank Fartkofsky,	28	1	1	Polish, . .	Miner, ...	No. 1 Slope, Nanticoke, .
19	4	Jos. Grudofsky, . .	40	1	2	Polish, . .	Laborer, . . .	
20	4	Christian Powell, .	36	1	3	German, .	Bratticeman,	
21	18	Michael Sweeney, .	36	1	8	Irish, . .	Miner, ...	Alden, ...
22	22	Thomas Hughes, .	45	.	.	Irish, . .	Laborer, . . .	No. 5 Breaker, Nanticoke,
23	22	Richard Emmitt, .	45	1	4	German, .	Miner, ...	Hollenback, ...
24	23	Thomas Thomas, .	27	.	.	Welsh, . .	Laborer, . . .	No. 4 Slope, Nanticoke, . .
25	27	Wm. Hatchwell, . .	27	1	1	English, .	Miner, ...	Boston, ...
26	July 3	Patrick Gallagher,	30	.	.	Irish, . .	Laborer, . . .	Warrior Run, ...
27	6	Michael Furtie, . .	26	.	.	Polish, . .	Laborer, . . .	Reynolds, ...
28	8	Llewellyn Daniels,	35	1	6	Welsh, . .	Miner, ...	No. 2 Slope, Nanticoke, . .
29	18	John Smith, ...	43	1	1	Irish, . .	Miner, ...	Alden, ...
30	27	John Adomzact, . .	32	.	.	Polish, . .	Laborer, . . .	No. 2 Shaft, Nanticoke, . .
31	Aug. 5	Thomas Hennerty,	45	1	4	Irish, . .	Laborer, . . .	Hollenback, ...
32	11	Wilson Rymer, . .	.	1	2	American,	Miner, ...	West End, ...
33	11	John Bilby, ...	.	1	4	American,	Laborer, . . .	
34	11	Nicholas Bertels, .	.	1	5	German, .	Miner, ...	
35	11	James Fry, ...	.	1	2	American,	Miner, ...	
36	11	H. O. Meade, . . .	.	1	2	American,	Miner, ...	
37	11	John Wyurkoski, .	25	1	.	Polish, . .	Laborer, . .	
38	11	Peter Boruzki, . .	27	.	.	Polish, . .	Miner, ...	
39	11	James Whalen, . .	55	.	.	Irish, . .	Laborer, . . .	
40	11	William Zienty, . .	24	.	.	Polish, . .	Laborer, . . .	
41	11	Anthony Boruzki, .	25	.	.	Polish, . .	Laborer, . . .	
42	21	John M. Smith, . .	30	1	3	English, .	Miner, ...	No. 4 Slope, Nanticoke, . .
43	Sept. 15	William B. Jones, .	33	1	7	Welsh, . .	Laborer, . . .	No. 2 Shaft, Nanticoke, . .
44	19	James McCabe, . .	52	1	6	Irish, . .	Miner, ...	No. 5, Plymouth, ...
45	24	George Shiner, . .	45	.	.	Hungarian,	Miner, ...	Alden, ...
46	26	William Waugh, . .	39	1	1	Scotch, . .	Miner, ...	Newport Tunnel, ...
47	28	James McAndrews, .	20	.	.	Irish, . .	Miner, ...	Maffit, ...
48	Oct. 7	George Cooper, . .	45	1	6	Irish. . .	Laborer, . . .	No. 2 Shaft, Nanticoke, . .
49	15	Ivor Williams, . . .	14	.	.	Welsh, . .	Door boy, . .	Dodson, ...
50	21	Frank Lamoraux, .	34	1	2	American,	Carpenter, . .	No. 2 Shaft, Plymouth, .
51	21	John Kerst, ...	43	1	4	American,	Carpenter, . .	
52	21	Frank Spinnette, .	28	1	2	Polish, . .	Laborer, . . .	
53	21	Anthony Spinnette,	22	.	.	Polish, . .	Laborer, . . .	
54	21	Thomas Collins, . .	36	1	4	Irish, . .	Miner, ...	
55	21	Dennis Titus, . .	32	1	5	American,	Carpenter, . .	
56	31	Richard Jennings, .	27	.	.	Irish, . .	Miner, ...	No. 2 Shaft, Nanticoke, . .
57	Nov. 9	Michael Stradinsky,	35	1	2	Hungarian,	Laborer, . . .	Newport Breaker, ...
58	16	Henry McCloskey,	34	1	2	Irish, . .	Miner, ...	Maffit, ...
59	17	David Shipps, . . .	45	.	.	American,	Miner, ...	Boston, ...

Anthracite coal fields of Pennsylvania, with remarks on the cause of each accident, December 31, 1885.

Remarks on the Causes of the Accidents.	CAUSES OF THE ACCIDENTS								Number.
	Explosion of C H 4 gas.	Falling of roof and coal.	Falling down shafts.	Crushed by mine cars.	Explosion of powder and blasts.	Miscellaneous underground.	On surface.	Total.	
Instantly killed by falling under cars,				1				1	1
Fatally hurt by a fall of coal; died the same evening,		1						1	2
Crushed between a car and prop; died the same evening,				1				1	3
Instantly killed; caught between cage and timber at bottom of shaft,						1		1	4
While he and another person were ascending the shaft on the bucket, the engineer failed to stop the engine; they both jumped off above the landing, and Eagan fell back into the shaft and was instantly killed.			1					1	5
Fatally hurt by being jammed between cars; died February 5,				1				1	6
Kicked on the abdomen by a mule; died the following day,						1		1	7
Fatally injured by an explosion of gas; died the same day,	1							1	8
Fatally burned by an explosion of gas; died February 26,	1							1	9
Killed by being crushed between railroad car and post,							1	1	10
Skull fractured by a premature blast; died the following day,					1			1	11
Fatally hurt by a fall of top coal; died the same day,		1						1	12
Instantly killed by falling off the platform to the bottom of shaft,			1					1	13
Fell down the shaft and was instantly killed,			1					1	14
Skull fractured by a stone which fell from side of shaft; died the same day,						1		1	15
Instantly killed by a fall of top coal,		1						1	16
Fatally injured by a fall of coal; died in three hours after,		1						1	17
These three men were fatally burned by an explosion of gas caused by the heedlessness of Fartkofskey. The first died June 1, the second June 5, and the third on June 17,	3							3	18 / 19 / 20
Instantly killed by a fall of roof,		1						1	21
Fell under cars and was injured so that he died in two hours after,							1	1	22
Fatally injured by a premature blast; died immediately after,					1			1	23
Fatally injured by a fall of slate; died June 27,		1						1	24
Severely injured by a fall of coal; died on the way home,		1						1	25
Run over by cars; died from injuries received July 5,				1				1	26
Killed by a blast; refused to heed the alarm given,					1			1	27
Instantly killed by a premature blast,					1			1	28
Almost instantly killed by cars running upon him,				1				1	29
Fatally hurt by being run over by cars; died July 29,				1				1	30
Instantly killed by a fall of coal. Ed. McGinnis, the miner, was severely injured at the same time,		1						1	31
All these persons were suffocated by gas arising from the boiler fires in the mine. The fan broke and failed to run at about 11 o'clock, P. M., the previous evening. Some time between this and the following morning the air current reversed, conveying the gases into the slope workings. The miners went to work at 7.30 o'clock as usual, and were affected by the poisonous gases soon after entering their working places. These ten men failed to come out, and were all found lying at various points on the gangway dead.						1			32
						1			33
						1			34
						1			35
						1			36
						1			37
						1			38
						1			39
						1			40
						1		10	41
Instantly killed by a fall of rock,		1						1	42
Spine dislocated by a fall of rock; died September 17,		1						1	43
Instantly killed by a fall of top coal,		1						1	44
Killed by a fall of roof,		1						1	45
Instantly killed by a fall of rock,		1						1	46
Fatally hurt by a fall of rock in breast; died the same evening,		1						1	47
Instantly killed by descending cage while looking down the shaft,							1	1	48
Instantly killed; fell off the cage while ascending the shaft,			1					1	49
. . . . . All these persons were fatally burned by explosion of gas at No. 2 Shaft. Gas had accumulated in an abandoned part of the mine, not far from the bottom of the shaft, and it was exploded by one of the workmen who went in there with a naked lamp. There were sixteen persons more or less injured,	1							1	50
Died Oct. 27, . .	1							1	51
Died Oct. 26, . .	1							1	52
Died Oct. 27, . .	1							1	53
Died Oct. 21, . .	1							1	54
Instantly killed,	1							1	55
Fatally hurt by a fall of top coal; died the same day,		1						1	56
Instantly killed by falling under a railroad car at the breaker,							1	1	57
Seriously burned by an explosion of powder; died November 24,					1			1	58
Killed by a fall of roof while in the act of setting a prop up,		1						1	58

TABLE No. II—

Number.	DATE.	Names of Persons Killed	Age.	Widows.	Orphans.	Nationality.	Occupation.	Names of the Collieries.
60	Nov. 30	Jacob Swab, ...	52	1	5	German, .	Loader, . . .	Stanton Breaker, ...
61	Dec. 3	Hugo Mills, ...	38	1	5	English, .	Laborer, . . .	No. 1 Shaft, Nanticoke, . .
62	5	John Lynot, ...	45	1	5	Irish, . .	Miner, ...	Empire, ...
63	10	Charles Dwyer, . .	30	. .	. .	German, .	Laborer, . . .	No. 5 Breaker, Nanticoke,
64	18	Thomas Clifford, .	14	. .	. .	Irish, . .	Door boy, . .	
65	18	William Danahey, .	15	. .	. .	Irish, . .	Driver, ...	
66	18	Joseph McCarty, . .	25	1	. .	Irish, . .	Miner, ...	
67	18	Abram Lewis, . . .	35	1	2	Welsh, . .	Miner, ...	
68	18	Edward Matthews,	20	. .	. .	Welsh, . .	Laborer, . . .	
69	18	Thomas Williams, .	22	. .	. .	Welsh, . .	Laborer, . . .	
70	18	Edward Margraves,	22	. .	. .	English, .	Miner, ...	
71	18	William Elkie, . . .	17	. .	. .	German, .	Runner, . . .	
72	18	Max Longoskie, . .	16	. .	. .	Polish, . .	Driver, ...	
73	18	Mich'l Adamchick,	24	. .	. .	Hungarian,	Laborer, . . .	
74	18	Oliver Kiveler, . . .	32	1	3	American,	Miner, ...	
75	18	William Kiveler, .	18	. .	. .	American,	Laborer, . . .	
76	18	Frank Kiveler, . .	30	1	3	American,	Miner, ...	No. 1 Slope, Nanticoke, .
77	18	John Shutt, ...	28	1	3	American,	Laborer, . . .	
78	18	August Matule, . .	45	1	3	Polish, . .	Miner, ...	
79	18	Isaac Sarver, . . .	26	. .	. .	American,	Miner, ...	
80	18	John Sarver, ...	20	. .	. .	American,	Laborer, . . .	
81	18	Andrew Low, . . .	26	. .	. .	American,	Miner, ...	
82	18	John Hawk, ...	26	. .	. .	American,	Laborer, . . .	
83	18	Vincent Luke, . . .	23	. .	. .	Polish, . .	Miner, ...	
84	18	L. Jelgoshinskie, .	24	. .	. .	Polish, . .	Laborer, . . .	
85	18	Peter Motulwick, .	25	. .	. .	Polish, . .	Laborer, . . .	
86	18	John Nowack, . . .	26	. .	. .	Polish, . .	Miner, ...	
87	18	Adam Rubinskey, .	26	. .	. .	Polish, . .	Laborer, . . .	
88	18	John Drajno, . . .	35	1	3	Hungarian,	Miner, ...	
89	18	John Sloff, ...	27	1	2	Hungarian,	Laborer, . . .	
				46	145			

Continued.

Remarks on the Causes of the Accidents.	CAUSES OF THE ACCIDENTS. Explosion of CH_4 gas.	Falling of roof and coal.	Falling down shafts.	Crushed by mine cars.	Explosions of powder and blasts	Miscellaneous underground.	On surface.	Total.	Number.
Killed by falling under a railroad car which he was running from under the breaker,							1	1	60
Killed by fall of rock while at work at the head of a new plane,		1						1	61
Leg severely crushed and his body injured; he returned to a blast, supposing it missed fire, and it exploded as he was approaching it; died December 8,					1			1	62
Instantly killed by a loaded rock car, which ran upon him on the bank,							1	1	63
At about 10 o'clock, A. M., a large body of quick-sand broke into this mine near the face of the workings, and in about one hour filled the lowest gangways all the way out to the main slope, a distance of about 3,000 feet. These 26 persons were closed in, or buried in the sand. While laboring under a mistake as to the locality where the sand broke into the mine, the officers of the company entertained hopes of recovering most of the entombed persons alive, and strenuous efforts were made to that effect; but, after setting the surveyors at work to locate the fall as indicated on the surface on the map of the underground workings, all hopes of saving them alive were dispelled. The survey showed that the quick-sand had broken in on the apex of a small anticlinal upon which most of the entombed men were working, and that most probably they were caught and covered by the rush of sand in a short time after it broke into the mine.						1		1	64
						1		1	65
						1		1	66
						1		1	67
						1		1	68
						1		1	69
						1		1	70
						1		1	71
						1		1	72
						1		1	73
						1		1	74
						1		1	75
						1		1	76
						1		1	77
						1		1	78
						1		1	79
						1		1	80
						1		1	81
						1		1	82
						1		1	83
						1		1	84
						1		1	85
						1		1	86
						1		1	87
						1		1	88
						1		1	89
	11	17	4	6	6	39	6	89	

TABLE No. II.—*A list of accidents resulting in death in the Second district of the for the year ending*

Number	Date.	Names of Persons Killed.	Age.	Widows.	Orphans.	Nationality	Occupation.	Names of the Collieries.
1	Jan. 3	George Woodyat, .	40	1	. .	English, .	Miner, ...	Harry E, ...
2	3	David Roberts, . .	. .	. .	. .	Welsh, . .	Miner, ...	Midvale, ...
3	Mar. 5	John Duffy, ...	17	. .	. .	Irish, . .	Driver, ...	Bennett, ...
4	7	David R. Jones, . .	28	1	1	Welsh, . .	Blacksmith, .	Prospect, ...
5	April 18	William Cooper, . .	30	1	4	English, .	Laborer, . . .	Bennett, ...
6	30	William Tonkin, . .	29	1	4	English, .	Miner, ...	Harry E, ...
7	June 8	Martin Kroutlitz, .	38	1	3	Hungarian,	Laborer, . . .	Black Diamond, ...
8	11	John Lynott, ...	.	1	4	Irish, . .	Miner, ...	Henry, ...
9	17	David Harris, . . .	17	. .	. .	Welsh, . .	Runner, . . .	Schooley, ...
10	July 6	Daniel Donnelly, .	60	1	4	Irish, . .	Miner, ...	Hillman Slope, ...
11	7	David S. Knarr, . .	34	1	3	American,	Tracklayer, .	Raubville Shaft, ...
12	18	John Walsh, ...	27	. .	. .	Irish, . .	Miner, ...	Oak Wood Prospect, ...
13	25	William Pyfiler, . .	30	1	2	English, .	Miner, ...	Prospect, ...
14	Aug. 8	James Bromage, . .	20	. .	. .	English, .	Footman, . .	Black Diamond, ...
15	8	John J. Barrett, . .	55	1	5	English, .	Miner, ...	
16	Sept. 2	William Kenny, . .	14	. .	. .	American,	Slate-picker, .	Laurel Run, ...
17	2	John J. Martin, . .	35	. .	. .	Irish, . .	Miner, ...	
18	2	James Kearney, . .	25	. .	. .	Irish, . .	Laborer, . . .	
19	2	Thomas Jenkins, .	30	1	2	Welsh, . .	Miner, ...	Oak Wood Prospect, . . .
20	2	John Peterson, . .	25	1	. .	Swede, . .	Miner, ...	
21	4	Dugald Burt, ...	33	1	1	Scotch, . .	Miner, ...	Bennett, ...
22	21	Anthony Ronosos, .	20	. .	. .	Polish, . .	Laborer, . . .	Clear Spring, ...
23	Oct. 15	Martin Johanson, .	24	1	1	Swede, . .	Laborer, . . .	Clear Spring, ...
24	17	Michael Gallagher,	45	1	. .	Irish, . .	Co-laborer, .	Mill Creek Slope, ...
25	21	Thomas Spellman,	. .	1	. .	Irish, . .	Laborer, . . .	Henry, ...
26	26	John Ballock, . . .	30	1	1	Hungarian,	Laborer, . . .	Forty Fort, ...
				17	35	. . . . .	. . . . .	. . . . .

The above accidents occurred in the mines of that portion of the Second district which, under the old of an inspector for the Second district.

Anthracite coal field of Pennsylvania, with remarks on the cause of each accident, December 31, 1885.

Remarks on the Causes of the Accidents.	Causes of the Accidents.								Number.
	Explosions of C H4 gas.	Falling of roof and coal.	Falling down shafts.	Crushed by mine cars.	Explosions of powder and blasts.	Miscellaneous under ground.	On surface.	Total.	
Instantly killed by a fall of rock,		1						1	1
Severely burned by an explosion of gas; died January 20,	1							1	2
Instantly killed; head crushed between two cars while uncoupling them,				1				1	3
Instantly killed by runaway cars at bottom of plane,				1				1	4
Almost instantly killed by a fall of rock,		1						1	5
Killed by a blast; returned too soon, believing the squib missed,					1			1	6
Fatally injured by a fall of rock; died in two hours thereafter,		1						1	7
Fatally hurt by a fall of rock; died the same day,		1						1	8
Fatally hurt by falling under a car; died the same day,				1				1	9
Fatally injured by a premature blast; die t shortly after being taken home,				1				1	10
Instantly killed by a fall of coal in face of gangway,		1						1	11
Fatally hurt by a premature blast; died about two hours after,					1			1	12
Instantly killed by a fall of rock,		1						1	13
Instantly killed, This accident caused by explosion of gas at top	1							1	14
Fatally burned, of tunnel, Cooper seam. Barrett died Aug. 10,	1							1	15
Leg severely crushed under railroad car. Died September 10,							1	1	16
These four men were killed by a piece of rock falling from the side of shaft upon the cage while they were on it descending						1		1	17
the shaft in the morning. There were ten persons on, but six						1		1	18
of them escaped uninjured,						1		1	19
								1	20
Instantly killed by a fall of coal,		1						1	21
Killed by a fall of rock; the miner, Thomas Hines, was slightly hurt the same time,		1						1	22
Fatally hurt by a fall of coal; died the same day,		1						1	23
Instantly killed by runaway cars on slope,				1				1	24
Killed by a blast bursting through pillar from adjoining breast,					1			1	25
Instantly killed by being run over by a trip of cars in the mine,				1				1	26
	3	9		6	3	4	1	26	

law, were in the Middle district of Luzerne and Carbon counties. They occurred prior to the appointment

TABLE No. III.—*Showing number of days worked by the breakers, average tons of coal mined per day, number of persons employed persons injured, persons killed tons of coal mined per person injured and killed, tons of coal mined per life lost, ratio of employés to the persons injured and killed, total tons of coal mined, kegs of powder used, and mules and horses employed during 1885.*

LEHIGH AND WILKES-BARRE COAL COMPANY.

NAMES OF THE COLLIERIES.	Number of days worked by breaker.	Average tons of coal mined per day.	Number of persons employed.	Number of persons seriously injured.	Number of persons killed.	Tons of coal mined per persons injured and killed.	Tons of coal mined per life lost.	Ratio of employees to each person injured and killed.	Total tons of coal mined during 1885.	Number of kegs of powder used for all purposes in the mines.	Number of mules and horses employed.
1. Diamond,	171.20	737	530	8	. . .	15,780	No life lost.	92.1	126,241.14	3,728	49
2. Hollenback,	175.00	1,002	663	5	2	35,080	87,700	94.7	175,401.03	4,991	45
3. Empire,	168.65	1,205	783	2	1	67,768	203,304	261.0	203,304 06	5,713	42
4. Hartford, or Jersey,	173.15	670	517	4	. . .	29,024	No life lost.	129.2	116,098.17	3,698	24
5. Stanton,	151.15	1,081	669	7	2	18,164	81,741	74 3	163,483.17	4,367	43
6. Sugar Notch Shaft,	167.30	913	697	7	. . .	21,822	No life lost.	99.5	152,758.04	4,753	45
7. Sugar Notch Slope,	. . . . .	. . . . .	28	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	5
8. Lance, No. 11,	170 00	738	490	3	2	25,096	62,741	98.0	125,482.09	4,196	35
9. Nottingham,	170.60	2,180	1,233	3	3	61,987	123,975	205.5	371,925.03	9,232	91
10. Reynolds,	171.55	799	470	2	1	45,728	137,184	156.6	137,184.06	3,643	50
11. Wanamie,	174.45	794	519	1	. . .	138,659	No life lost.	519.0	138,659.16	5,168	57
Totals Lehigh and Wilkes-Barre Coal Company,	*169.30	10,103	6,599	42	11	32,274	155,500	124.5	1,710,539.15	49,489	486

DELAWARE AND HUDSON CANAL COMPANY.

12. Baltimore Slope,	205.25	431	211	1	. . .	88,575	No life lost.	211.0	88,575.16	3,543	28
13. Baltimore Tunnel,	60.25	470	331	. .	. . .	None injured.	No life lost.	. . . .	28,369.16	1,031	35
14. Conyngham,	194.50	542	270	5	. . .	21,095	No life lost.	54.0	105,478	2,952	24
15. Boston Mines,	190.25	784	317	. . .	2	None injured.	74,652	158.5	149,304	4,222	36
16. No. 2 Plymouth,	39.00	513	338	10	6	1,251	3,337	21 1	20,025.05	801	40
17. No. 3 Plymouth,	206.50	936	425	1	. . .	193,346	No life lost.	425.0	193,346.03	6,232	57
18. No. 4 Plymouth,	159 75	656	320	1	. . .	104,822	No life lost.	320.0	104,822.14	3,818	39
19. No. 5 Plymouth,	197.50	899	424	3	1	44,418	177,674	106.0	177,674.08	4,825	54
Totals Delaware and Hudson Canal Company,	*156.62	5,539	2,636	21	9	28,919	96,399	87.8	867,596.02	27,454	313

SUSQUEHANNA COAL COMPANY.

20.	Breaker, No. 1,	300.50	662	486	60	43	13,842	33,158	32.5	198,970.09	36,683	52
21.	Breaker, No. 2,	307.35	1,612	1,350						495,474.03		161
22.	Grand Tunnel, No. 3,	294.70	618	414						190,970.05		39
23.	Breaker, No. 5,	302.45	1,786	1,106						540,378.17		161
24.	Newport, No. 6,	90.25	453	561	3	2	8,188	20,471	112.8	40,943.03		27
	Totals Susquehanna Coal Company,	259.05	5,661	3,920	63	45	13,580	32,591	36.2	1,466,736.17	36,683	440

KINGSTON COAL COMPANY.

25.	Breaker, No. 1,	209.60	945	416	1	. . .	198,082	No life lost.	416	198,082.07	5,818	42
26.	Breaker, No. 2,	216.60	1,341	661	5	. . .	58,092	No life lost.	132.1	290,462.02	7,632	59
27.	Gaylord,	181.75	936	476	3	1	42,562	170,249	119	170,249.10	4,221	31
	Totals Kingston Coal Company,	202.45	3,259	1,553	9	1	65,979	659,793	155.3	659,793.19	17,731	132

MISCELLANEOUS COAL COMPANIES.

28.	Alden,	212.67	910	542	2	3	38,591	64,319	108.4	192,958	8,790	44
29.	Avondale,	181.60	832	450	3	1	50,396	151,190	112.5	151,190.08	3,782	102
30.	Chauncey,	185.00	99	60	1	. . .	18,420	No life lost.	60 0	18,420	320	7
31.	Dodson,	190.05	793	373	6	1	21,532	150,730	53.5	150,730	5,160	39
32.	Dorrance,	145.95	131	108	. . .	. . .	None injured.	No life lost.	. . . .	19,231.19	774	5
33.	East End,	132.50	162	157	. . .	. . .	None injured.	No life lost.	. . . .	21,486.05	885	. . . . .
34.	West End,	281.20	458	297	3	10	9,915	12,889	22 8	128,899.11	4,295	. . . . .
35.	Franklin,	177.25	785	450	6	. . .	23,212	No life lost.	75.0	139,274.18	2,989	35
36.	Hillman Vein,	177.05	352	243	14	2	3,891	31,158	15.1	62,316	2,379	15
37.	Mollit,	164.20	710	303	. . .	2	57,839	57,839	151.5	115,679.10	3,937	30
38.	Parrish Colliery,	259.00	553	395	1	. . .	143,249	No life lost.	365	143,249.18	4,879	23
39.	Red Ash, No. 1,	151.05	700	311	2	. . .	52,911	No life lost.	155.5	105,822.19	3,626	23
40.	Red Ash, No. 2,	153.75	716	342	2	. . .	55,110	No life lost.	171	110,220.13	3,772	23
41.	Salem,	225.00	147	117	2	. . .	16,549	No life lost.	58.5	33,098	1,080	17
42.	Warrior Run,	170.00	472	245	1	1	80,400	80,400	122.5	80,400	1,643	17
	Totals Miscellaneous Coal Companies,	187.08	7,873	4,365	43	20	23,380	73,648	69.2	1,472,978.01	48,311	340

TABLE No. III—*Continued.*

RECAPITULATION.

NAMES OF THE COLLIERIES.	Number of days worked by breaker.	Average tons of coal mined per day.	Number of persons employed.	Number of persons injured.	Number of persons killed.	Tons of coal mined per person injured and killed.	Tons of coal mined per life lost.	Ratio of employees to each person injured and killed.	Total tons of coal mined during 1885.	Number of kegs of powder used for all purposes in the mines.	Number of mules and horses employed.
Lehigh and Wilkes-Barre Coal Company,	169.30	10,103	6,599	42	11	32,274	155,500	124.5	1,710,539.13	49,489	486
Delaware and Hudson Canal Company,	156.62	5,539	2,636	21	9	28,919	96,399	87.8	867,596.02	27,454	313
Susquehanna Coal Company,	259.05	5,661	3,920	63	45	13,580	32,594	36.2	1,466,736.17	36,683	440
Kingston Coal Company,	202.45	3,259	1,553	9	1	65,979	659,793	155.3	659,793.19	17,731	132
Miscellaneous Coal Companies,	187.08	7,873	4,365	43	20	23,380	73,648	69.2	1,472,978.01	48,311	340
	*194.90	31,696	19,073	178	86	23,400	71,833	72.2	6,177,644.13	179,668	1,711

*Averages.

There were three men killed in shafts not producing coal: two at the Woodward, No. 1, Shaft, and one at the South Wilkes-Barre Shaft; adding these makes the number of fatal accidents 89. The fractions of tons are twentieths in the above table.

TABLE No. IV—*The number of each class of employés at each colliery during the year 1885.*

LEHIGH AND WILKES-BARRE COAL COMPANY.

Names of the Collieries.	Number of Persons Employed Inside.							Number of Persons Employed Outside.							Grand totals Inside and outside.
	Bosses.	Miners.	Laborers.	All company men.	Drivers and runners.	Door boys.	Totals inside.	Bosses.	Mechanics.	Head and plate men.	All company men.	Drivers and runners.	Slate pickers.	Totals outside.	
1. Diamond,	1	80	105	86	51	30	353	1	19	10	10	7	130	177	530
2. Hollenback,	1	130	181	67	42	16	437	1	25	12	45	6	137	226	663
3. Empire,	1	159	206	67	52	26	511	1	16	27	45	6	177	272	783
4. Hartford, or Jersey,	1	103	124	50	14	17	309	1	9	18	45	2	133	208	517
5. Stanton,	1	108	170	75	45	30	429	1	26	18	28	3	164	240	669
6. Sugar Notch Shaft,	1	125	169	59	46	24	424	1	12	20	72	8	160	273	697
7. Sugar Notch Slope,	1	....	....	15	....	....	16	....	4	....	8	....	....	12	28
8. Lance, No. II,	1	119	120	48	42	16	346	1	9	9	30	5	90	144	490
9. Nottingham,	1	258	288	112	101	54	814	1	14	31	48	5	320	419	1,233
10. Reynolds,	1	100	91	34	42	27	295	1	8	10	34	6	116	175	470
11. Wanamie,	1	134	100	48	37	32	352	1	12	20	25	7	102	167	519
12. South Wilkes-Barre,	1	....	....	....	....	....	1	....	1	....	5	....	....	6	7
Totals Lehigh and Wilkes-Barre Coal Company,	12	1,316	1,551	661	472	272	4,287	10	155	175	395	55	1,529	2,319	6,606

DELAWARE AND HUDSON CANAL COMPANY.

13. Baltimore Slope,	1	39	40	30	23	5	138	1	3	6	23	5	35	73	211
14. Baltimore Tunnel,	1	60	55	30	25	7	178	1	7	7	64	2	72	153	331
15. Conyngham,	1	48	48	40	27	12	176	1	4	8	30	1	50	94	270
16. Boston Mines,	1	68	68	29	27	10	203	1	8	7	41	1	50	111	317
17. No. 2 Plymouth,	2	68	67	55	33	12	237	1	8	5	31	4	52	101	338
18. No. 3 Plymouth,	2	103	96	38	48	21	308	1	6	5	29	5	71	117	425
19. No. 4 Plymouth,	1	71	67	37	35	19	230	1	9	8	21	3	48	90	320
20. No. 5 Plymouth,	3	98	80	65	48	29	323	3	6	10	32	2	48	101	424
Totals Delaware and Hudson Canal Company,	12	555	521	324	266	115	1,793	10	51	56	274	26	426	843	2,636

TABLE No. IV.—*Continued.*

SUSQUEHANNA COAL COMPANY.

NAMES OF THE COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals inside and outside.
	Bosses.	Miners.	Laborers.	All company men.	Drivers and runners.	Door boys.	Totals inside.	Bosses.	Mechanics.	Head and plate men.	All company men.	Drivers and runners.	Slate pickers.	Totals outside.	
21. Breaker, No. 1,	2	100	120	17	23	6	268	1	30	10	102	12	63	218	486
22. Breaker, No. 2,	2	215	420	153	151	69	1,070	1	18	28	87	11	135	280	1,350
23. Grand Tunnel, No. 3,	1	72	110	30	17	4	234	1	12	8	29	3	127	180	414
24. Breaker, No. 5,	2	200	300	178	102	53	835	1	32	21	80	9	128	271	1,106
25. Newport, No. 6,	1	90	175	45	11	9	331	1	51	9	91	3	78	233	564
Totals Susquehanna Coal Company,	8	737	1,125	423	304	141	2,738	5	143	76	389	38	531	1,182	3,920

KINGSTON COAL COMPANY.

26. Nos. 1 and 4 Shafts,	2	120	79	30	37	20	288	2	2	5	25	4	90	128	416
27. Nos. 2 and 3 Shafts,	2	178	167	29	53	38	467	2	19	9	33	1	130	194	661
28. Gaylord,	1	125	70	36	31	15	278	1	22	16	35	4	120	198	476
Totals Kingston Coal Company,	5	423	316	95	121	73	1,033	5	43	30	93	9	340	520	1,553

MISCELLANEOUS COAL COMPANIES.

29. Alden,	1	174	113	44	40	10	382	1	16	16	18	5	104	160	542
30. Avondale,	2	105	107	33	24	11	282	1	11	7	33	6	110	168	450
31. Chauncey,	1	10	10	12	6	....	39	1	3	2	5	....	10	21	60
32. Dodson,	1	107	60	26	30	11	235	1	9	9	48	4	69	140	375
33. East End,	1	33	25	11	15	1	86	1	1	4	17	....	48	71	157
34. West End,	1	77	66	15	27	4	190	1	5	6	39	1	55	107	297
35. Franklin,	1	80	75	48	26	20	250	1	20	12	90	12	65	200	450

36. Hillman Vein,	1	35	57	58	11	14	176	1	2	8	26	2	28	67	243
37. Moffit,	1	70	65	6	13	10	165	1	12	21	16	6	82	138	303
38. Parrish Colliery,	1	69	101	34	29	10	244	1	6	9	22	....	83	121	365
39. Red Ash, No. 1,	1	102	41	10	21	11	186	1	3	10	50	4	57	125	311
40. Red Ash, No. 2,	1	97	80	7	24	13	222	1	3	14	53	3	46	120	342
41. Salem,	2	29	26	8	5	2	72	1	3	4	8	4	25	45	117
42. Warrior Run,	1	70	54	15	7	10	157	1	4	7	25	6	45	88	245
43. Dorrance,	1	11	18	26	3	....	59	1	5	4	28	1	10	49	108
Totals Miscellaneous Coal Companies,	17	1,069	898	353	281	127	2,745	15	103	133	478	54	837	1,620	4,365

RECAPITULATION.

Lehigh and Wilkes-Barre Coal Company,	12	1,316	1,551	661	472	272	4,287	10	155	175	395	55	1,529	2,319	6,606
Delaware and Hudson Canal Company,	12	555	521	321	266	115	1,793	10	51	56	274	26	426	843	2,636
Susquehanna Coal Company,	8	737	1,125	423	301	111	2,738	5	143	76	389	38	531	1,182	3,920
Kingston Coal Company,	5	423	316	95	121	73	1,033	5	43	30	93	9	340	520	1,553
Miscellaneous Coal Companies,	17	1,069	898	353	281	127	2,745	15	103	133	478	54	837	1,620	4,365
Totals all Coal Companies,	54	4,100	4,411	1,856	1,441	728	12,596	45	495	470	1,629	182	3,663	6,484	19,080

TABLE No. V. —*Showing number of days worked by each breaker at every colliery, and for each month during 1885.*

LEHIGH AND WILKES-BARRE COAL COMPANY.

Names of the Collieries.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1. Diamond,	11.00	11.80	11.30	13.50	11.50	12.50	15.20	14.90	15.40	16.60	16.80	20.80	171.20
2. Hollenback,	11.20	12.10	10.05	13.60	12.00	13.10	15.85	15.50	14.95	16.30	19.00	21.35	175.00
3. Empire,	11.20	12.05	10.25	13.60	12.80	12.40	13.20	15.00	14.85	15.55	17.30	20.45	168.65
4. Jersey,	11.20	8.85	11.20	14.10	12.80	12.45	15.60	14.90	15.25	16.30	18.90	21.60	173.15
5. Stanton,	10.15	6.10	12.00	12.10	11.70	12.90	15.60	15.50	14.30	18.00	16.80	6.00	151.15
6. Sugar Notch Shaft,	9.30	3.80	12.00	13.00	12.80	13.30	15.80	15.10	15.20	16.20	19.90	20.60	167.30
7. Sugar Notch Slope,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8. Lance, No. 11,	10.60	12.80	10.10	14.20	12 00	13.05	16.20	15.00	14.80	15.35	18.90	17.00	170.00
9. Nottingham,	10.90	12.45	9.90	13.45	12.50	12.50	16.10	14.80	15.00	15.15	18.50	19.35	170.60
10. Reynolds,	10.85	11.85	10.90	13.50	12.20	12.20	15.80	15.20	15.35	15.10	19.00	19.60	171.55
11. Wanamie,	11.10	12.80	11.20	14.10	12.80	12.50	15.20	14.90	15.10	15.40	19.50	19.85	174.45

DELAWARE AND HUDSON CANAL COMPANY.

12. Baltimore Slope,	13.25	12.75	12.50	16.50	15.00	14.75	15.25	16.50	23.50	25.50	21.50	18.25	205.25
13. Baltimore Tunnel,	2.50	.....	.....	.....	.....	.....	.....	.....	.....	20.50	22.00	15.25	60.25
14. Conyngham,	12.50	12.75	12.75	16.00	15.50	14.75	13.50	12.25	25.25	24.00	15.75	19.50	194.50
15. Boston Mines,	12.25	12.75	12.00	15.25	14.75	12.75	15.00	15.25	17.00	26.00	20.50	16.75	190.25
16. No. 2, Plymouth,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20.50	18.50	39.00
17. No. 3, Plymouth,	12.00	13.00	12.25	15 75	15.00	15.00	15.25	17.25	24.00	26.50	23.75	16.75	206.50
18. No. 4, Plymouth,	1.75	.....	.....	15.75	15.00	14.75	14.50	17.25	21.25	23.25	20.25	16.00	159.75
19. No. 5, Plymouth,	11.25	12.50	13.00	15.50	11.00	14.00	15.25	17.00	23.50	23.75	23.25	17.50	197.50

SUSQUEHANNA COAL COMPANY.

20. Breaker, No. 1,	23.90	24.00	25.60	26.00	25.50	26.70	25.30	25.00	26.00	27.00	25.00	20.50	300.50
21. Breaker, No. 2,	24.50	24.00	26.00	26.00	25.50	26.40	26.00	26.00	26.00	27.90	25.80	23.25	307.35
22. Grand Tunnel, No. 3,	23.40	22.40	25.80	25.80	25.00	26.00	25.90	24.30	24.70	25.70	24.00	21.70	294.70
23. Breaker, No. 5,	23.90	22.90	25.50	26.00	25.50	26.00	26.00	26.00	26.00	26.75	24.75	23.25	362.45
24. Newport, No. 6,	.....	.....	.....	.....	.....	.....	.....	.....	13.50	27.00	25.00	24.75	90.25

KINGSTON COAL COMPANY.

25. Breaker, No. 1,	9.65	13.30	15.10	11.35	11.70	14.45	16.40	19.80	23.30	26.00	24.00	24.55	209.60
26. Breaker, No. 2,	10.70	13.15	15.00	12.20	10.15	13.80	18.30	20.00	24.70	26.70	24.60	26.70	216.00
27. Gaylord,	7.00	9.25	11.15	7.70	10.30	14.50	15.50	18.50	21.00	22.35	23.00	21.50	181.75

MISCELLANEOUS COAL COMPANIES.

28. Alden,	12.45	10.75	12.20	16.85	16.25	17.075	20.575	23.50	22.325	22.825	19.975	17.90	212.675
29. Avondale,	10.40	13.30	20.20	3.00	6.00	13.30	17.00	19.00	22.20	24.70	17.10	15.40	181.60
30. Chauncey,	13.00	11.00	15.00	15.00	13.00	12.00	17.00	18.00	16 00	14.00	22.00	19.00	185.00
31. Dodson,	7.80	10.75	12.40	12.95	10.10	13.30	15.85	19.50	23.65	25.10	23.40	15.25	190.05
32. East End,	18.60	18.95	22.70	22.05	21.60	20.00	8.60						132.50
33. West End,	21.90	23.50	26.00	23.15	25.25	26.00	24.80	17.00	22.00	25.20	23.30	23.10	281.20
34. Franklin,	12.75	5.25	9.75	12.75	13.75	13.75	15.00	16.00	18.50	23.25	22.25	14.25	177.25
35. Hillman Vein,	13.50	9.90	16.40	11.85	12.55	11.15	10.80	16.275	18.95	19.925	17.40	18.35	177.05
36. Maffit,	8.60	7.20	10.70	12 20	12.40	12.00	12.70	12.00	18.00	21.40	20.70	16.30	164.20
37. Parrish Breaker,	16.60	17.45	21.50	18.20	19.45	21.30	22.20	22.95	24.95	26.30	23.30	24.80	259.00
38. Red Ash, No. 1,	8.05	8.25	9.20	11.20	11.70	12.60	11.60	11.25	13.35	17.30	20.55	16.00	151.05
39. Red Ash, No. 2,	7.95	8.10	9.65	11.10	11.95	10.40	12.95	11.25	14.00	18.60	20.65	17.15	153.75
40. Salem,	18.25	16.75	19.00	13.00	18.50	21.25	16.00	16.75	20.00	22.75	22.25	20.50	225.00
41. Warrior Run,	8.50	8.00	10.00	11.00	12.00	14.00	16.00	15.50	21.00	24.00	21.00	9.00	170.00
42. Dorrance,	23.00	18.65	21.95	19.60	18.80	7.55					14.55	21.85	145.95

TABLE No. VI.—*Showing the number and horse-power of each class of engines and number of steam boilers in use at each colliery during 1885.*

LEHIGH AND WILKES-BARRE COAL COMPANY.

NAMES OF THE COLLIERIES.	Number of hoisting engines.	Horse-power.	Number of breaker engines.	Horse-power.	Number of pumping engines.	Horse-power.	Number of fan engines.	Horse-power.	Number of donkey pumps.	Horse-power.	Number of mine locomotives.	Horse-power.	Total number of engines.	Total horse-power of engines.	Number of steam boilers.
1. Diamond,	4	400	1	60	1	80	1	80	....	....	1	30	8	650	33
2. Hollenback,	8	758	1	80	1	400	2	180	3	110	....	....	15	1,528	21
3. Empire,	3	280	1	60	1	350	2	110	1	30	2	60	10	890	30
4. Hartford, or Jersey,	4	388	2	50	4	566	2	80	3	....	1	35	16	1,119	30
5. Stanton,	7	710	1	60	1	560	3	180	....	....	1	35	13	1,545	38
6. Sugar Notch Shaft,	3	200	2	65	3	210	2	80	....	....	....	....	10	555	17
7. Sugar Notch Slope,	4	280	2	120	4	340	2	80	....	....	....	....	12	820	26
8. Lance, No. 11,	4	608	1	50	3	100	1	125	....	....	....	....	9	883	12
9. Nottingham,	4	528	1	60	3	240	1	80	....	....	2	60	11	968	27
10. Reynolds,	2	80	1	50	....	....	3	100	....	....	....	....	6	230	13
11. Wanamie,	3	180	2	70	1	175	2	40	....	....	....	....	8	465	17
12. South Wilkes-Barre,	1	80	....	....	....	....	1	20	....	....	....	....	2	120	6
Totals Lehigh and Wilkes-Barre Coal Company,	47	4,492	15	725	22	3,021	22	1,155	7	140	7	220	120	9,773	260

DELAWARE AND HUDSON CANAL COMPANY.

13. Baltimore Slope,	8	560	1	70	....	....	1	70	4	....	....	....	14	700	17
14. Baltimore Tunnel,	2	70	1	37	1	70	2	160	5	208	2	140	13	685	19
15. Conyngham,	3	180	1	35	1	300	3	120	1	10	....	....	9	645	14
16. Boston Mines,	4	130	1	35	2	120	1	25	2	20	1	80	11	410	15
17. No. 2, Plymouth,	2	120	1	40	3	260	2	55	1	30	....	....	9	505	21
18. No. 3, Plymouth,	2	120	1	35	1	300	1	45	2	204	....	....	7	506	12
19. No. 4, Plymouth,	4	200	1	40	....	....	1	60	3	140	....	....	9	440	12
20. No. 5, Plymouth,	5	220	1	40	1	60	2	75	3	125	1	20	13	540	15
Tota's Delaware and Hudson Canal Company,	30	1,600	8	332	9	1,110	13	610	21	737	4	240	85	4,431	125

SUSQUEHANNA COAL COMPANY.

21. Breaker, No. 1,	2	230	2	80	1	45	3	300	1	30	1	40	10	725	26
22. Breaker, No. 2,	7	1,565	1	80	1	55	7	600	3	165	6	260	25	2,725	74
23. Grand Tunnel, No. 3,	5	1,000	1	100	....	....	1	15	2	75	1	40	10	1,230	29
24. Breaker, No. 5,	8	1,600	1	80	1	210	3	180	2	40	2	100	17	2,210	66
25. Newport, No. 6,	8	1,410	1	100	....	....	5	140	2	75	1	40	17	1,765	60
Totals Susquehanna Coal Company,	30	5,805	6	440	3	310	19	1,235	10	385	11	480	79	8,655	255

KINGSTON COAL COMPANY.

26. Breaker, No. 1,	3	480	1	31	9	80	1	13	4	22	....	....	18	642	24
27. Breaker, No. 2,	10	590	1	90	2	160	2	135	6	60	3	94	24	1,129	24
28. Gaylord,	16	2,000	1	70	2	170	1	70	2	10	1	40	23	2,360	24
Totals Kingston Coal Company,	29	3,070	3	191	13	410	4	218	12	92	4	134	65	4,131	72

MISCELLANEOUS COAL COMPANIES.

29. Alden,	2	260	1	75	1	110	1	40	....	....	....	....	5	485	12
30. Avondale,	6	230	1	40	1	90	1	40	5	86	1	20	15	506	26
31. Chauncey,	....	....	1	30	....	....	....	....	....	....	....	....	1	30	4
32. Dodson,	2	192	1	55	2	1,293	1	31	2	15	....	....	8	1,586	12
33. Dorrance,	4	320	1	40	1	80	1	90	....	....	....	....	7	530	12
34. East End,	2	100	1	60	....	....	....	....	....	....	....	....	3	160	9
35. West End,	3	140	1	50	....	....	1	25	3	60	1	25	9	300	15
36. Franklin,	5	235	1	30	2	125	3	90	8	183	2	30	21	693	40
37. Hillman Vein,	3	48	1	20	....	....	2	40	2	....	....	....	8	108	9
38. Maffit,	2	100	1	60	....	....	1	20	....	....	....	....	4	180	6
39. Parrish Colliery,	1	40	1	40	....	....	1	40	....	....	....	....	3	120	7
40. Red Ash, No. 1,	2	50	1	40	....	....	1	20	1	30	....	....	5	140	6
41. Red Ash, No. 2,	2	25	1	30	....	....	....	....	....	....	....	....	3	55	2
42. Salem,	....	....	1	60	....	....	....	....	....	....	....	....	1	60	2
43. Warrior Run,	1	60	1	30	2	....	2	40	2	....	....	....	8	130	20
	35	1,800	15	660	9	1,698	15	476	23	374	4	75	101	5,083	182

TABLE No. VI--*Continued*

RECAPITULATION.

NAMES OF THE COLLIERIES.	Number of hoisting engines.	Horse-power.	Number of breaker engines.	Horse-power.	Number of pumping engines.	Horse-power.	Number of fan engines.	Horse-power.	Number of donkey pumps.	Horse-power.	Number of mine locomotives.	Horse-power.	Total number of engines.	Total horse-power of engines.	Number of steam boilers.
Lehigh and Wilkes-Barre Coal Company,	47	4,492	15	725	22	3,021	22	1,155	7	140	7	220	120	9,773	260
Delaware and Hudson Canal Company,	30	1,600	8	332	9	1,110	13	610	21	737	4	240	85	4,431	125
Susquehanna Coal Company,	30	5,805	6	440	3	310	19	1,235	10	385	11	480	79	8,655	255
Kingston Coal Company,	29	3,070	3	191	13	410	4	218	12	92	4	134	65	4,131	72
Miscellaneous Coal Companies,	35	1,800	15	660	9	1,698	15	476	23	374	4	75	101	5,083	182
	171	16,767	47	2,348	56	6,549	73	3,694	73	1,728	30	1,149	450	32,073	894

TABLE No. VII.—*Showing the state of ventilation in all the collieries operated in the Third or Wilkes-Barre district, at the close of the year ending December 31, 1885.*

Names of the Collieries.	Water-gauge in inches.	Total cubic feet of air per minute at the inlet.	Cubic Feet of Air Per Minute Passing Near the Face of Workings in Each Split.								Total cubic feet of air per minute passing near the face of workings.	Number of Persons Employed in Each Split on the Day Shift.								Total cubic feet of air per minute passing through the outlet.
			No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.		No. 1.	No. 2.	No. 3.	No. 4	No. 5.	No. 6.	No. 7.	No. 8.	
1. Diamond,	...	152,340	21,400	15,000	24,080	11,400	18,400	20,800	28,120	....	139,200	40	25	55	*	*	30	....	....	152,980
2. Hollenback,	1.60	271,500	43,000	54,200	25,500	46,560	25,300	15,000	....	....	209,560	86	50	65	76	†	30	....	....	295,000
3. Empire,	2.00	179,700	35,700	15,000	21,000	33,600	13,000	15,800	24,000	....	158,100	25	40	33	73	50	58	70	....	195,000
4. Jersey,	...	91,600	9,400	8,100	9,800	9,000	10,100	9,000	....	....	55,400	30	19	55	33	36	36	....	....	90,800
5. Stanton,	...	179,350	9,380	28,400	40,890	42,000	24,150	16,800	....	....	161,620	20	74	93	70	35	*	....	....	218,161
6. Sugar Notch Shaft,	1.30	176,570	18,430	16,100	50,280	23,700	15,860	23,100	15,720	13,300	176,490	69	10	40	14	10	24	53	24	181,680
7. Sugar Notch Slope,	1.00	15,500	14,000	....	....	....	....	....	....	....	14,000	64	....	....	....	....	....	....	....	16,000
8. Lance, No. 11,	...	142,380	39,780	31,670	27,140	23,100	....	....	....	....	121,690	114	32	28	50	....	....	....	....	141,780
9. Nottingham,	...	113,200	13,900	22,500	15,200	14,600	16,000	17,200	....	....	99,400	112	123	106	12	118	98	....	....	141,000
10. Reynolds,	...	67,700	39,000	17,100	28,200	....	....	....	....	....	67,200	110	98	96	....	....	....	....	....	76,200
11. Wanamie,	...	65,700	17,100	13,100	18,000	....	....	....	....	....	48,200	78	80	53	....	....	....	....	....	68,080
12. Baltimore Slope,	...	88,250	22,750	15,300	23,400	21,800	....	....	....	....	83,250	39	7	....	....	....	....	....	....	109,860
13. Baltimore Tunnel	...	176,000	92,000	34,680	38,400	....	....	....	....	....	165,080	‡	110	51	....	....	....	....	....	178,600
14. Conyngham,	...	129,600	10,250	18,000	15,600	22,200	18,200	14,800	....	....	98,850	*	6	57	19	11	44	....	....	149,550
15. Boston Mine,	...	47,950	16,380	12,660	2,660	3,860	....	....	....	....	35,560	74	68	13	12	....	....	....	....	53,090
16. No. 2, Plymouth,	...	68,300	25,230	19,100	....	....	....	....	....	....	44,340	165	37	....	....	....	....	....	....	71,570
17. No. 3, Plymouth,	...	52,530	14,780	18,240	12,230	....	....	....	....	....	45,250	109	110	75	....	....	....	....	....	52,640
18. No. 4, Plymouth,	...	37,470	12,540	18,260	....	....	....	....	....	....	30,800	47	62	....	....	....	....	....	....	37,570
19. No. 5, Plymouth,	...	143,000	16,000	11,000	14,000	12,000	12,060	10,500	4,000	5,000	84,500	74	31	40	35	70	40	12	10	152,000
20. No. 1 Shaft, Nanticoke,	...	121,100	25,000	13,000	13,000	12,900	15,000	16,000	14,000	....	108,900	120	45	60	15	†	60	15	....	157,500
21. No. 2 Shaft, Nanticoke,	...	134,898	19,060	18,500	14,400	18,000	14,500	10,300	....	....	94,760	75	75	60	63	43	27	....	....	137,532
22. No. 1 Slope, Nanticoke,	...	16,800	3,000	....	....	....	....	....	....	....	3,000	26	....	....	....	....	....	....	....	17,000
23. No. 2 Slope, Nanticoke,	...	130,000	46,000	20,000	47,500	....	....	....	....	....	113,500	75	12	75	....	....	....	....	....	152,800
24. No. 3, Grand Tunnel,	...	83,175	8,220	14,450	10,895	8,760	16,740	8,670	....	....	67,675	4	18	16	18	40	20	....	....	87,230
25. No. 4 Slope, Nanticoke,	...	183,600	40,000	25,000	39,750	....	....	....	....	....	101,750	70	50	50	8	.*	....	....	....	208,720
26. No. 4 Tunnel, Nanticoke,	...	21,480	13,500	....	....	....	....	....	....	....	13,500	105	....	....	....	....	....	....	....	23,800
27. Newport Tunnel,	...	67,000	26,000	25,000	....	....	....	....	....	....	51,000	64	65	....	....	....	....	....	....	70,000
28. No. 1 Shaft, Kingston,	...	63,790	10,700	17,430	21,000	....	....	....	....	....	49,130	16	80	133	....	....	....	....	....	72,100
29. No. 2 Shaft, Kingston,	...	61,090	7,000	15,650	15,400	19,500	9,850	7,850	....	....	75,250	23	27	54	52	36	23	....	....	85,750
30. No. 3 Shaft, Kingston,	...	68,400	17,500	7,600	12,300	8,900	10,500	....	....	....	56,800	30	6	28	25	36	....	....	....	78,800
31. Gaylord,	1.00	114,800	15,500	18,000	19,500	25,200	....	....	....	....	78,200	70	67	75	59	....	....	....	....	117,500
32. Alden,	1.20	91,335	9,885	18,435	17,375	8,340	7,670	14,385	16,530	....	87,620	12	55	47	16	13	78	75	....	93,700
33. Avondale,	...	95,000	13,575	19,200	7,100	8,820	4,700	....	....	....	53,395	39	40	38	36	4	....	....	....	109,832
34. Dodson,	...	58,250	16,000	9,400	10,700	6,000	....	....	....	....	42,100	58	45	66	28	....	....	....	....	67,320
35. Dorrance,	...	115,310	25,841	68,254	....	....	....	....	....	....	94,095	4	18	....	....	....	....	....	....	118,192

TABLE No. VII.—*Continued.*

NAMES OF THE COLLIERIES.	Water-gauge in inches.	Total cubic feet of air per minute at the inlet.	CUBIC FEET OF AIR PER MINUTE PASSING NEAR THE FACE OF WORKINGS IN EACH SPLIT.								Total cubic feet of air per minute passing near the face of workings.	NUMBER OF PERSONS EMPLOYED IN EACH SPLIT ON THE DAY SHIFT.								Total cubic feet of air per minute passing through the outlet.
			No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.		No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	
36. Franklin Slope,	1.00	25,500	10,900	9,000	3,000	....	....	....	....	....	22,900	48	40	21	...	...	...	...	...	38,460
37. Old Slope,	1.10	.....	5,070	9,470	21,760	16,500	7,875	....	....	....	60,675	5	4	21	27	35	...	...	...	81,800
38. Hillman Vein,	1.60	174,450	47,000	50,260	10,900	13,900	....	....	....	....	122,060	50	9	6	18	...	...	...	...	176,420
39. Maffit,	...	67,500	6,000	14,500	7,500	7,000	....	....	....	....	35,000	60	34	50	24	...	...	...	...	67,800
40. Parrish,	...	85,000	15,000	6,000	28,000	13,000	....	....	....	....	62,000	60	16	50	36	...	...	...	...	102,000
41. Red Ash, No. 1,	...	104,150	31,500	16,000	18,200	10,300	13,600	4,300	....	....	93,900	48	37	17	26	19	18	...	...	102,220
42. Red Ash, No. 2,	...	45,800	10,400	11,600	7,200	2,000	....	....	....	....	31,200	57	59	68	13	...	...	...	...	45,700
43. West End,	...	50,000	8,640	10,880	10,070	10,800	6,000	3,600	....	....	49,990	15	30	36	32	18	20	...	...	51,200
44. Warrior Run,	...	53,500	9,100	8,200	8,600	7,000	8,100	....	....	....	41,000	30	22	11	16	24	...	...	...	54,000

*Old workings. †Stable. ‡Locomotive.

TABLE VIII.—*Showing location of collieries in the Third District Anthracite Coal Fields.*

Name of Colliery.	Name of Operator.	Location—County.	Name of Superintendent.	Post-Office Address.
Diamond,	Lehigh and Wilkes-Barre Coal Company,	Wilkes-Barre, Luzerne county,	T. H. Phillips,	Wilkes-Barre, Pa.
Hollenback,	do. do.	do. do.	do.	do. do.
Empire,	do. do	do. do.	do.	do. do.
Jersey,	do. do.	Ashley, Luzerne county,	do.	do. do.
Stanton,	do. do.	Wilkes-Barre, Luzerne county,	do.	do. do.
Sugar Notch Shaft,	do. do.	Sugar Notch, Luzerne county,	do.	do. do.
Sugar Notch Slope,	do. do.	do. do.	do.	do. do.
Lance, No. 11,	do. do.	Plymouth, Luzerne county,	do.	do. do.
Nottingham,	do. do.	do. do.	do.	do. do.
Reynolds,	do. do.	do. do.	do.	do. do.
Wanamie,	do. do.	Wanamie, Luzerne county,	do.	do. do.
South Wilkes-Barre,	do. do.	Wilkes-Barre, Luzerne county,	do.	do. do.
Baltimore Slope,	Delaware and Hudson Canal Company,	Wilkes-Barre twp., Luzerne co.	A. H. Vandling,	Providence, Scranton.
Baltimore Tunnel,	do. do.	Wilkes-Barre, Luzerne county,	do.	do. do.
Conyngham,	do. do.	do. do.	do.	do. do.
Boston Mine,	do. do.	Plymouth twp., Luzerne co.,	do.	do. do.
No. 2, Plymouth,	do. do.	Plymouth, Luzerne county,	do.	do. do.
No. 3, Plymouth,	do. do.	do. do.	do.	do. do.
No. 4, Plymouth,	do. do.	do. do.	do.	do. do.
No. 5, Plymouth,	do. do.	do. do.	do.	do. do.
Red Ash Shafts,	do. do.	Wilkes-Barre twp., Luzerne co.	do.	do. do.
No. 4 Tunnel,	Susquehanna Coal Company,	Nanticoke, Luzerne county,	J. A. Stearns,	Wilkes-Barre, Pa.
No. 1 Slope,	do. do.	do. do.	do.	do. do.
No. 2 Slope,	do. do.	do. do.	do.	do. do.
No. 3 Slope,	do. do.	West Nanticoke, Luzerne co.,	do.	do. do.
No. 4 Slope,	do. do.	Nanticoke, Luzerne county,	do.	do. do.
No. 1 Shaft,	do. do.	do. do.	do.	do. do.
No. 2 Shaft,	do. do.	do. do.	do.	do. do.
Newport Shaft,	do. do.	Morgantown, Luzerne county,	do.	do. do.
Newport Slope,	do. do.	do. do.	do.	do. do.
Newport Tunnel,	do. do.	do. do.	do.	do. do.
No. 1 Shaft,	Kingston Coal Company,	Kingston, Luzerne county,	Daniel Edwards,	Kingston, Luzerne county.
No. 2 Shaft,	do. do.	do. do.	do.	do. do.
No. 3 Shaft,	do. do.	do. do.	do.	do. do.
No. 4 Shaft,	do. do.	do. do.	do.	do. do
Alden Shaft,	Alden Coal Company,	Alden, Luzerne county,	K. M. Smith,	Alden, Luzerne county.
Alden Tunnel,	do. do.	do. do.	do.	do. do.
Avondale,	Delaware, Lack. and Western R. R. Co.,	Plymouth twp., Luzerne co.,	W. R. Storrs,	Scranton, Pa.
Woodward, No. 1,	do. do.	do. do.	do.	do.
Woodward, No. 2,	do. do.	do. do.	do.	do.
Chauncey,	T. P. Macfarlane,	do. do.	T. P. Macfarlane,	Kingston, Pa.
Dodson,	Plymouth Coal Company,	Plymouth, Luzerne county,	James B. Davies,	Plymouth, Pa.
Dorrance,	Lehigh Valley Coal Company,	Wilkes-Barre, Luzerne county,	Fred. C. Mercur,	Wilkes-Barre, Pa.
East End,	West End Coal Company,	Mocanaqua, Luzerne county,	John Teasdale,	Shickshinny, Pa.

TABLE VIII.—*Continued.*

Name of Colliery.	Name of Operator.	Location—County.	Name of Superintendent.	Post-Office Address.
West End,	West End Coal Company,	Mocanaqua, Luzerne county,	John Teasdale,	Shickshinny, Pa.
Franklin Slope,	Franklin Coal Company,	Wilkes-Barre, Luzerne county,	R. R. Morgan,	Wilkes-Barre, Pa.
Brown Slope,	do. do.	do. do.	do.	do. do.
New Slope,	do. do.	do. do.	do.	do. do.
Hillman Vein,	Hillman Vein Coal Company,	do. do.	E. L. Parrish,	do. do.
Maffit Shaft,	Hanover Coal Company,	Sugar Notch, Luzerne county,	J. Roberts, Jr.,	do. do.
Maffit Tunnel,	do. do.	do. do.	do.	do. do.
Parrish Colliery,	Parrish Coal Company,	Plymouth, Luzerne county,	H. H. Ashley,	Plymouth, Pa.
No. 1, Red Ash,	Red Ash Coal Company,	Wilkes-Barre twp., Luzerne co.	M. B. Williams,	Wilkes-Barre, Pa.
No. 2, Red Ash,	do. do.	do. do.	do.	do. do.
Salem,	Salem Coal Company,	Shickshinny, Luzerne county,	Lemuel Smith,	Shickshinny, Pa.
Warrior Run,	A. J. Davies & Co.,	Warrior Run, Luzerne county,	A. J. Davies,	Wilkes-Barre, Pa.

FOURTH DISTRICT,

Comprising Luzerne and Carbon Counties.

Honorable J. Simpson Africa, *Secretary of Internal Affairs of the Commonwealth of Pennsylvania:*

Sir: In accordance with the requirements of section seven of article two of the act of Assembly entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith," I have the honor of presenting my fifth annual report, which contains several interesting tables and lists of fatal and non-fatal accidents.

It also contains brief notes on the present condition of the mines; the fire at Ebervale; the flooding of Harleigh and Ebervale collieries, with description of general improvements about the collieries, and of fatal and non-fatal accidents during the year 1885.

The total number of accidents was two hundred, a decrease of fifty-seven since 1884, of which forty-two proved fatal. The fatal accidents cause twenty widows and fifty-eight orphans to mourn the loss of their protectors, and these widows and orphans will now be dependent upon the charity-loving public.

The total quantity of coal produced in 1885 was five million five hundred and thirty-five thousand five hundred and forty-three tons, an increase over the previous year of two hundred and eighty-eight thousand three hundred and sixteen tons. The total production includes all the coal shipped to market, the coal sold at the mines, the coal used by the employés, and the coal used for generating steam at all the collieries.

The average number of days worked in this district was two hundred and eight, an increase over 1884 of twenty-four days.

The producing capacity of this district, taking the years 1884 and 1885 as a basis, is about twenty-eight thousand tons per day, and whenever the state of the coal trade warrants it, this district can produce in round numbers about eight million tons of coal per year.

I have, for the fifth time, called the attention of the public to the great

need of a hospital at Hazleton, where the injured from the mines and railroads can be properly treated.

Respectfully submitted,

JAMES E. RODERICK,
Inspector of Mines.

HAZLETON, PA., *March, 1886.*

The Amount of Coal Produced by each Company during the Year 1885.

A. Pardee & Co.,	530,806
Coxe Bros. & Co ,	893,487
Lehigh Coal and Navigation Company,	598,905
Linderman, Skeer & Co.,	440,552
G. B. Markle & Co.,	397,553
Upper Lehigh Coal Company,	373,491
J. Leisenring & Co.,	409,937
J. C. Haydon & Co.,	245,126
Pardee Bros. & Co.,	216,281
G. H. Myers & Co.,	189,193
Miscellaneous companies,	1,240,212
Total production,	5,535,543

Number of Employees, with the Average Number of Tons mined per Employee for 1885.

NAMES OF COMPANIES.	Number of persons employed.	Average number of tons mined per employé.
A. Pardee & Co.,	1,672	317.46
Coxe Bros. & Co.,	2,394	373.22
Lehigh Coal and Navigation Company,	1,681	356.28
Linderman, Skeer & Co.,	1,202	366.51
G. B. Markle & Co.,	870	433.95
Upper Lehigh Coal Company,	585	633.44
J. Leisenring & Co.,	776	528.26
J. C. Haydon & Co.,	573	427.79
Pardee Bros. & Co.,	413	523.68
G. H. Myers & Co ,	417	453.70
Miscellaneous companies,	3,174	390.74
Total and average,	13,734	402.96

Besides the above number of employés producing coal, there were four hundred and eighty-seven persons employed at stripping and other work, making the total number of employés of this district fourteen thousand two hundred and twenty-four.

The Number of Fatal Accidents, and the Amount of Coal Produced per Life Lost, during the Year 1885.

NAME OF COMPANIES.	Number of lives lost.	Coal mined per life lost—tons.
A. Pardee & Co.,	3	176,935
Coxe Bros. & Co.,	9	99,276
Lehigh Coal and Navigation Company,	1	598,905
Linderman, Skeer & Co.,	2	220,276
G. B. Markle & Co.,	2	198,776
Upper Lehigh Coal Company,	3	124,497
J. Leisenring & Co.,	5	81,987
J. C. Haydon & Co.,	2	122,563
Pardee Bros. & Co.,	1	216,281
G. H. Myers & Co.,	6	31,532
Miscellaneous companies,	8	155,026
Total and averages,	42	131,798

From the above, it can be seen that the amount of coal produced by each company per life lost varies from 31,532 to 598,905 tons. The first is extremely low average, the other is much above the average amount produced. Therefore, I have compiled a table of comparison for the last five years, which is placed opposite page——, giving the total amount of coal mined by each company, the total number of lives lost, and the amount of coal produced per life lost.

That table gives a fair average, which cannot be done by taking the figures for one year.

Table of Comparison showing the Different Causes of Fatal Accidents in this District, for the years 1881, 1882, 1883, 1884, and 1885.

	1881.	1882.	1883.	1884.	1885.
Explosion of carbureted hydrogen gases,	3	1	.		1
By falls of coal, roof, and sides,	24	24	18	10	19
By cars inside and outside,	11	8	11	17	8
By premature blasts,	1	1	1	3	3
By machinery inside and outside,	4	1	2	2	3
By boiler explosions,	. .	. .	. .	.	3
Miscellaneous inside and outside,	4	5	6	8	5
Total,	47	40	38	40	42

Table of Comparison showing number of Fatal Accidents per thousand persons employed in and about the Mines of this District, for the years 1881, 1882, 1883, 1884, and 1885.

YEAR.	Number of employés.	Number of deaths.	Ratio employed per death.	Number of deaths per thousand.
1881,	11,386	47	242.25	4.127
1882,	12,298	40	307.45	3.252
1883,	13,598	38	357.84	2.794
1884,	14,299	40	357.47	2.797
1885,	14,224	42	338.66	2.952
Averages,	13,159	41.4	320.73	3.184

TABLE No. 1.—Exhibits the number of deaths in the different classes of employees inside and outside of the Mines, and the causes thereof, for the year 1885.

CAUSES OF DEATH INSIDE OF THE MINES.	Miners.	Miners' laborers.	Helpers, boys.	Company laborers.	Mine-bosses.	Drivers.	Total.
Falls of coal, sides and roof,	14	4				1	19
By mine cars,		1	3			3	7
By explosion of carbureted hydrogen gas,	1						1
By premature explosions,	3						3
Miscellaneous,	3			1	1		
Total,	21	5	3	1	1	4	35

Causes of Death Outside of the Mines.	Laborers.	Slate-pickers.	Firemen.	Engineers.	Oilers.	Total.
By breaker machinery,		1		1	1	3
By explosion of boilers,			3			3
Miscellaneous,	1					1
Total,	1	1	3	1	1	7

TABLE No. 2.—Gives the total number of each class of employees, the number of deaths in each class, and the ratio of each class employed per life lost inside and outside of the Mines, for the year 1885.

CLASSES OF EMPLOYEES INSIDE OF THE MINES.	Number of each class employed.	Number of deaths in each class.	Ratio employed per week.
Miners,	3,205	21	152.62
Miners' laborers,	1,859	5	371.8
Helpers, (boys,)	314	3	104.66
Company laborers,	770	1	770
Mine-bosses,	76	1	76
Drivers,	764	4	191
All other employés,	663	. . .	. . .
Total,	7,651	35	218.6
Classes of Employés Outside.			
Laborers,	1,523	1	1,523
Slate-pickers,	2,861	1	2,861
Firemen, (boilers,)	265	3	88.33
Engineers, (breaker,)	60	1	60
Oilers, (breaker,)	70	1	70
All other employés,	1,794	. . . .	. . . . .
Total,	6,086	7	869.43

TABLE No. 3.—Gives the total number of each class of employees, the number of injuries to each class, and the ratio of each class employed per injury inside and outside of the Mines, for the year 1886.

CLASSES OF EMPLOYEES INSIDE OF THE MINES.	Number of each class of employés.	Number of accidents in each class.	Ratio employed per accident.
Miners,	3,205	75	42.73
Miners' laborers,	1,859	25	74.36
Runners and drivers,	764	20	38.2
Door boys and helpers,	314	5	63
All other employés,	1,509	18	83.83
Total,	7,651	143	53.5
Class employed Outside of the Mines.			
Carpenters and blacksmiths,	312	1	312
Slate-pickers,	2,861	5	572.2
All other employés,	3,400	9	377.7
Total,	6,573	15	438.2

TABLE No. 4.—Gives the number of Non-fatal Accidents, the Number of each class, and the causes thereof, during the year 1885.

	Accidents but no bones fractured.	Collar bone fractured.	Jaw bone fractured.	Ribs fractured.	Legs fractured.	Feet fractured.	Arms fractured.	Hands fractured.	Totals.
By falls of coal, roof, and sides,	26	2	1	2	23	4	6	. .	64
By mine cars, inside and outside,	23	4	2	. .	10	3	4	3	49
By explosion of gas,	5	. .	. .	. .	. .	. .	. .	. .	5
By premature blasts,	4	.	. .	. .	. .	. .	1	1	6
By explosion of powder,	3	. .	. .	. .	. .	. .	. .	. .	3
By machinery, inside and outside,	. .	. .	. .	. .	. .	. .	1	. .	1
Miscellaneous, inside and outside,	15	2	1	1	7	. .	4	. .	30
Total,	76	8	4	3	40	7	16	4	158

The General Condition of the Mines of this District.

At the end of my five years of service as the inspector of this district, I look with pride at its general condition. The ventilation is up to a satisfactory standard, and by a little care on the part of the mine-foremen there is no reason why a single miner in this district should not be supplied with an abundant quantity of air.

There are at present forty-seven breakers or collieries in this district, which are ventilated by fifty-three fans. Of these fifty-three fans, thirty-two have been erected during the last five years. All the mines of this district are supplied with fans, except a few of the old ones, where nothing but robbing pillars is being done. There is not a mine in this Fourth district that is ventilated by a furnace, as indeed while they were so ventilated very poor results were obtained, as the basins are generally too shallow for that kind of ventilation. The new mine law requires that at least two hundred cubic feet of air per minute shall be furnished to each and every person employed, and that such ventilation shall be conducted to the face of each working-place to dilute and render harmless all noxious and explosive gases. The ventilating fans of this district can nearly double the minimum quantity required by the mine law, and every foreman will be held responsible for neglect in seeing that every person has been provided the necessary ventilation. The coal companies have furnished enough power for adequate ventilation, and the man who toils in the bowels of the earth should be abundantly supplied inside as well as outside, or he cannot do his work with comfort or ease. Drainage is another provision of the new mine law, and any foreman neglecting drainage will be as guilty as the foreman who neglects ventilation, but the consequence of such neglect is not so alarming. I can cheerfully say that the drainage of this district has been greatly improved during the last year, and I expect to see further improvements during the coming year.

TABLE *giving the number, diameter, and width of fans erected in this district during the years 1881, 1882, 1883, 1884, and 1885.*

	Number of fans.	Diameter of each fan.	Width of each fan.	Year erected.	Remarks.
No. 3, Lehigh Coal and Navigation Co.,	1	21	7′	1884	
No. 5, Lehigh Coal and Navigation Co.,	1	12	3′	1883	
No. 6, Lehigh Coal and Navigation Co.,	1	21	7′	1885	
No. 9, Lehigh Coal and Navigation Co.,	1	16	3′	1885	
No. 9, Lehigh Coal and Navigation Co.,	1	12	3′	1882	
Lehigh Coal and Navigation Co.,	1	21	7′	1883	
No. 1, Linderman, Skeer & Co.,	1	15	5′	1881	
No. 2, Linderman, Skeer & Co.,	1	15	5′	1883	
No. 3, Linderman, Skeer & Co.,	1	15	5′	1884	
Humboldt, Linderman, Skeer & Co.,	1	15	5′	1885	
Hazleton Mine, A. Pardee & Co.,	1	20	6′	1883	
Laurel Hill, A. Pardee & Co.,	1	6	1′ 6″	1882	Murphy.
Cranberry, A. Pardee & Co.,	1	16	5′	1883	
Beaver Meadow, Coxe Bros. & Co.,	1	16	4′ 6″	1885	
Gowen, Coxe Bros. & Co.,	1	16	4′ 6″	1882	
Mt. Pleasant, No. 2,	1	16	4′ 6″	1882	
Mt. Pleasant, No. 4,	1	16	4′ 6″	1883	
Eckley, No. 2, John Leisenring & Co.,	1	6	2′	1882	
Eckley, No. 5, John Leisenring & Co.,	1	16	4′ 6″	1882	
Coleraine, No. 1, Wm. T. Carter & Co.,	1	16	4′	1883	
Coleraine, No. 2, Wm. T. Carter & Co.,	1	6	2′	1885	Murphy.
Tresckow, No. 7, Lehigh and Wilkes-Barre Coal Co.,	1	16	4′ 3″	1882	
Tresckow, No. 9, Lehigh and Wilkes-Barre Coal Co.,	1	12	3′ 6″	1884	
Upper Lehigh, No. 5, Upper Lehigh Coal Company,	1	6	1′ 6″	1883	Murphy.
Upper Lehigh, No. 6, Upper Lehigh Coal Company,	1	8	3′	1884	Blackman.
Sandy Run, M. S. Kemmerer & Co.,	1	16	5′	1881	
Jeansville, J. C. Haydon & Co.,	1	16	4′	1882	
Latimer, No. 3,	1	16	4′ 6″	1883	
Beaver Brook, C. M. Dodson & Co.,	1	16	5	1883	
Oakdale, No. 1, G. B. Markle & Co.,	1	16	4′ 9″	1883	
Yorktown, No. 6, G. H. Myers & Co.,	1	8	3′	1884	
Harleigh, Kemmerer & Co.,	1	11	4′ 6″	1885	
Total,	32				
Number of fans previously erected,	21				
Total number of fans in this district,	53				

Prior to the year 1876, only two fans had been erected, one at Upper Lehigh and one at Nesquehoning. All the fans, except the above-named fans, are somewhat after the Guibal pattern, and the majority are giving good results.

The Ebervale Mine Fire.

It is not an infrequent occurrence to hear of a mine on fire; some are of a trivial character, while others are of a very serious and dangerous nature, both to persons and property. A great deal of money is spent, and many precious lives have been sacrificed in combating these mine fires.

On the 3d day of February, 1885, at about six o'clock in the evening, a

very damaging and most unexpected fire broke out in the No. 2 slope operated by the Ebervale Coal Company. The men quit work at five o'clock, and in one short hour the whole slope was ablaze. So sudden was the fire, and so swift its course, that scarcely any time was given to check its headway before it was at the mouth of the slope, extending up the plane and igniting the breaker. The fire was manfully fought, and was extinguished on the surface before much damage was done.

The cause of the fire is not positively known, but it is supposed to have been the remains of an old lamp wick being thrown away by some reckless person among some combustible material, while putting a new wick in his lamp, as there was no fire anywhere in the mines, except in the mine locomotive, which was one hundred and fifty yards away from where the fire commenced. To confirm this conclusion, it is said that a man was seen putting a wick in his lamp, where the fire took place, at the time the last car of men was about being hoisted.

This information leaked out after the fire was extinguished, which goes to show how secretly these mysterious happenings can be kept from being made public.

The No. 2 slope was sunk on the south dip of the Mammoth vein, a distance of eight hundred and twenty feet to the basin, and consisted of three lifts, the first and the bottom lifts having been worked out. The second lift, where the fire commenced, was six hundred and ninety feet from the surface, and the first lift three hundred and forty-five feet, dipping at an angle varying from 30° to 40°. The slope was very thickly timbered from the mouth to the bottom. It consisted of two tracks, a steam and a pump-way. Owing to the heat generated by the steam pipes, which were well covered, the timbers were very dry and easily ignitable, and, assisted by the heavy draught of air in the slope, due to the heat, caused the fire to burn with fierceness and rapidity, so that in half an hour's time it had reached the mouth of the slope. So terrific and intense was the fire by this time that it could be compared to nothing else than a volcano. It continued to burn unabated until the slope caved in, which broke the steam pipes, causing the air-current to reverse, which undoubtedly was the means of saving the breaker. Now that the course of the air was changed, and the slope on fire being the downcast, the noxious gases produced by the fire caused the men to leave the mines as speedily as possible, but many were overcome and had to be carried out. During this time, the steam from twenty boilers was injected into the mines. Afterward, the steam was shut off as it did no good; then the air took its natural course, enabling the men to reënter the mines through the adjoining slope, and follow up the fire, bratticing off the air at all available points. In the meanwhile, other men were busily engaged connecting various lines of gas pipe and hose to the pumps in slope No. 1, and extending them to the different places to play on the fire. While this was going on, or a little while previous, the Hazle-

ton fire company had extended their hose to the connection on the pumps, and did some excellent service in fighting back the fire on the second lift, between Nos. 1 and 2 slopes, but finding it to be a long and tedious job, they got tired and went home, leaving their hose for our use.

At this juncture, Mr. James E. Roderick, inspector of mines; Mr. Thomas Griffiths, mine-boss at Harleigh colliery; and T. D. Jones, superintendent, held a consultation, and decided upon the plan of fighting the fire by extending the long lines of pipes in various directions, and extinguishing it by water. There were nine thousand feet of $1\frac{1}{2}''$, $2''$, $2\frac{1}{2}''$, and $3''$ gas pipe, and five thousand feet of $2''$ and $2\frac{1}{2}''$ gum hose, used in forming nine main lines from the pump to the site of the fire; invariably two lines were formed, or extended from each of the nine lines directly on the fire.

After the fire was fought back to the slope from the gangways and tunnels, it was followed and extinguished up the slope on top of the fallen *débris*. As before stated, the slope was not entirely closed, a space of about four feet being left, through which we climbed up on top of the fallen stuff, advancing slowly and carefully, extinguishing the fire and timbering as we advanced. To afford protection to the men, a manway was carried up the slope, alongside of the slope pillar, but was discontinued after the fire was extinguished, nearly up to the first lift. A great deal of the trouble and annoyance experienced in putting the fire out, as we advanced on top of the *débris*, was owing to the water not penetrating through the fallen stuff to the fire; consequently, as we would advance, probably fifty feet, the fire would again break out in the rear, and the gas would explode with the roar of a cannon, causing the men to retreat greatly frightened. However, this was partially overcome by keeping some of the hose in advance, whilst others followed up in the rear, with a sufficient amount of water to extinguish the fire that was underneath the mass of fallen coal. At many places we had to drill holes through the fallen *débris*, and drill man-holes along the pillar to reach the bottom slate, in order to get at the fire that the water would not otherwise reach, as it ran over the stuff like the water off a duck's back.

The hardest part of the fighting came when we reached the first lift, as the fire had spread east and west at that point, and the old gangways were all down. How to reach the fire on the east of the first lift of the slope was a mooted question, as the gangway was closed and there was no way of getting back of the fire to prevent it from extending westward. At last we decided to work our way up an abandoned breast, from the second lift, which pitched about 65°, making it very difficult to climb up, owing to the manway props being rotten. After reaching the face, a hole was driven through the pillar to the outside breast, from which a hole was driven to the first lift gangway, at a point about one hundred and twenty feet west of the place to which the fire had extended. To re-open this distance to the site of the fire, all the lumber needed to timber this piece of ground

had to be carried up the breast, which was very laborious and dangerous work.

After working our way a short distance from the hole driven up from the face of the breast over the fallen *débris*, the mine inspector detected a large body of explosive gas within fifteen feet of the fire. The question then arose how to get rid of the gas. It was finally decided to drive holes from the slope through the pillar into the breast, east of and next from the slope. In doing this, the men had to work in the midst of the fire burning in the slope. A hole, eight yards long, had to be driven and timbered in this manner, where a man could stand no longer than three minutes at a time ; however, it was accomplished and ventilation produced.

In causing the ventilation, it was feared that it would cause the gas to come in contact with the fire and ignite, in the event of which it would cause destruction of life and property. In the meantime, fortunately, the gas had become diluted, and no explosion took place.

The fighting then became general. From the east and west of the slope, every inch was obstinately fought, and in course of several weeks, after driving cross-cuts and recross-cuts, as it were, on top of the fire, with four lines of hose, with a pressure of two hundred feet head playing on it, the fire was extinguished.

While fighting the fire on the west side, it was discovered that it had extended to the east of the slope, through a cross-cut into a breast, which was put out after a week's hard fighting. While all this was going on, twenty-four men were busily engaged in timbering the mouth of the slope in the face of the noxious gases and heat emitted from the fire, to prevent the mouth of the slope from caving in, for had we not been successful in keeping the mouth of the slope open, all the work that we had accomplished would have been futile, as the men fighting the fire in the slope would have been overcome by gas. To give a minute account of the "ins and outs" of all that transpired during a period of about two and a half months of fighting the fire would fill a volume of many pages; suffice it to say, that it was one of the most desperate mine fires ever fought successfully in the anthracite region.

The cost of putting out the fire was about forty thousand dollars, not including the repairs necessary to re-open the slope afterward.

Accompanying this report, is a map of the slope on fire, giving the outline of the manner in which the pipes and hose were conducted from the pumps in the adjoining slope to the fire, and the way by which all the material had to be carried through small holes, cut out by the men, through fallen top rock and shale. At "A," on map, was a large Allison pump, to which a line of pipe was laid up the slope, thence through the second lift gangway "F" to the fire at the tinted portion shown on the map, where two lines were formed from the one. Two more lines of $2\frac{1}{2}$-inch hose were conveyed from the two Duplex pumps at "D" and "E," and along the

first lift gangway to the fire. A third line extended from these pumps down the slope and through the local basin gangway, thirty feet under the slope, at "H" to "I," marked on map, and up the breast, previously referred to in this report, to the first lift, to extinguish the fire back and into the slope. At "C" a mine locomotive was stationed to generate steam for a pump, from which two lines of pipe were carried to the foot of the slope where it originated, and at "C" was another 15-inch Duplex pump, and a small Cameron pump, to which was attached a 3-inch column-pipe, extending up the lower lift to the second, to where the fire originated. About four hundred persons were engaged at the fire, consisting of three eight-hour shifts, some playing water on the fire, others timbering, others carrying stuff to supply those working, and in this manner not a moment was lost to impede the progress of fighting the fire. So well was the regularity of the hoisting in the slope systematized that scarcely any time was lost in supplying the wants of the men, and hoisting the machinery of two Duplex pumps, which were taken out as it was deemed advisable to do so. Many men had very narrow escapes, yet there was not a person severely injured, but large numbers were so overcome by the noxious gases that they had to stay home for weeks.

The Flooding of Harleigh and Ebervale Mines.

Since the cave-in of the Harleigh, No. 3, in 1885, the water from that part of the mine has been allowed to run into Ebervale, through a series of bore-holes through the boundary pillar.

About the beginning of February, during the Ebervale mine fire, the superintendent, Mr. Jones, consulted me about plugging these bore-holes, so the Ebervale mines would not get flooded while they were fighting the fire. I authorized Mr. Jones to have the holes plugged, as I thought that the pillar was strong enough to withstand the pressure of the accumulating water for several months.

The fire at the Ebervale mine was all put out about the middle of April. By this time the water had raised vertically about one hundred feet at Harleigh, No. 3. In the beginning of May, I called Mr. Jones' attention to the large amount of water that was pressing against the boundary pillar, which was only about thirty-three feet in width. I requested him to have some of the plugs taken out, so the water could flow to Ebervale as before. Mr. Jones replied that they had all the water they could pump at that time; besides, he did not think it their duty to pump the Harleigh water, as they had done that long enough for glory. After that I called on Mr. Kemmerer, the operator of Harleigh, and requested him to have the water pumped out of the old No. 3; also saying that I did not think he had a right to endanger the lives of the Ebervale employés by allowing such a large body of water to accumulate in his mines. Mr. Kemmerer answered that they were pumping all the water that their mine made above

the level of their present workings, and had done so since he had taken charge of the Harleigh colliery. He fully demonstrated by figures that their pumping capacity was ample to contend with their water during the spring and fall of the year, when they had the most water to contend with.

He also said that he had nothing whatever to do with the old No. 3 water, as that place had caved in before he took the colliery, and as he was working above that level, he did not propose to pump that water.

About the middle of May, a cave-in occurred at Harleigh, which took in a part of the creek bed, allowing a great deal of water to go into Harleigh, No. 2, and from there ran into No. 3, raising the water to about one hundred and thirty feet vertically.

I called Mr. Kemmerer's attention to the necessity of moving the creek from its present location, as I considered it dangerous for his men to work when such a large amount of water was standing above them, which was perilous to all concerned. After several interviews, with no satisfactory results, I wrote to Messrs. Woolston and Ingham, the presidents of both land companies interested, about this large amount of water in the Harleigh mine, which should be pumped out by some party by all means; and also to the great danger from the creek breaking into the Harleigh mine during the wet season. I tried to impress on them that if such accident would occur, both Harleigh and Ebervale would be flooded.

After sending and receiving several letters from these gentlemen, with no satisfactory result, I concluded that the time had come for me to take a decisive step; therefore, I wrote to each of them, on the 3d day of July, that unless some satisfactory arrangement was made before the 11th day of July, I would ask the court for an injunction against working the Harleigh and Ebervale collieries.

On the 10th day of July, I wrote Messrs. Jones and Kemmerer as follows:

HAZLETON, PA., *July 10, 1885.*

T. D. JONES, Esq., *General Superintendent.*

DEAR SIR: After great deliberation, I came to the conclusion to ask you to suspend operation at the Ebervale collieries until the danger from the Harleigh water is removed. * * * *

Yours, very respectfully,

JAMES E. RODERICK,
Inspector of Mines.

HAZLETON, PA., *July 10, 1885.*

M. S. KEMMERER, Esq., *Lessee Harleigh Colliery.*

DEAR SIR: After great deliberation and a thorough investigation, I came to the conclusion to ask you to suspend operation at the Harleigh colliery. * * * * The danger I refer to is from the caving-in of a por-

tion of the roof, through which the creek will run in and endanger the lives of your employés. * * * *

Yours, very respectfully, James E. Roderick,
Inspector of Mines.

Messrs. Kemmerer and Jones complied with my request at once, saving the trouble of applying to the court for an injunction.

The stopping of these mines brought both coal companies and land-owners to terms. The Ebervale Coal Company agreed to take out some of the plugs, and pump the water from old No. 3. Kemmerer & Co. agreed to put a pump down in No. 3, to pump out a part of the water that usually found its way to Ebervale. The land-owners agreed to open a new channel for the creek, south of the outcrop of the Wharton. By this wise move of the land-owners, the lessee could mine a large amount of coal which was left in to support the roof under the bed of the creek.

After this general settlement, Ebervale and Harleigh were allowed to resume operations. T. S. McNair, Esq., made the necessary surveys for the new channel in the latter part of July, and accepted bids for the work from several parties. The contract was awarded to J. W. Crellin, of this borough, about the latter part of September, some two months after the necessary surveys were made, with the proviso that the work should be completed by the first day of December.

He started the work at once with a large force of men. Owing to the wet weather setting in, and a great scarcity of labor for a part of the time, the work was greatly delayed. But, after a great effort, Mr. Crellin failed to complete the work as per agreement.

The new channel was to be three thousand four hundred and seventy-five feet in length, sixteen feet wide at the bottom, with a side gradient of one and one half feet to one. The depth ranged from three to eighteen feet. There were about forty thousand cubic yards of ground removed in opening this channel. Had the contract been awarded in the early part of August as expected, the work would have been accomplished in much less time, as the bulk of the work could be finished before the fall rain came. This new channel was worked from several points, and was completed, except one block of two hundred feet in length, on the 8th day of December. On the 9th day of December, this region was visited by a heavy rain storm, and it kept up during the night of the 9th, which caused Black creek to rise rapidly and to overflow its banks.

About four o'clock on the morning of the 10th, the water found its way into the Harleigh mine through an old coop hole. Between six and seven o'clock the mine foreman of the Harleigh mine discovered that the creek was running into the mine. He at once organized a large force of men to endeavor to stop it by throwing logs, stumps, bales of hay, and everything movable that they could get hold of, but it was of no avail, as the large opening was carrying everything into the dark regions below.

By ten o'clock, this large volume of water had made a new channel about thirty feet deep and about one hundred feet in width. After failing in their effort, it was decided that there was only one thing to be done, and that was to open a narrow channel through the barrier, and turn the creek into the new channel. Hundreds of men were put to work, but they could not make much progress, as the ground was frozen to a depth of about two and one half feet. While these men were engaged in opening this channel, another party was building a dam to turn the water into it. By the following night the channel was partly opened, and the dam was finished, but before the water had risen high enough so it could run into the new channel the dam broke away allowing the creek to run into the mine as before.

The next morning another dam of larger proportions was started, and finished in about thirty-six hours. During the building of this dam, the new channel was again widened and deepened, being made six feet wide at the bottom.

The chute in the dam was closed, and the water filled and ran into the new channel; everything was working successfully, the water going through the narrow cut with ease, but running very swiftly.

A large force of men was kept widening the channel this Saturday night, and everything was looking favorable to the completion of the channel before another rain-storm came. Early Sunday morning a heavy fall of snow took place, which changed into rain about ten o'clock. The rain fell in torrents all day, and by night the creek was much higher than at the previous time. The narrow channel of six feet wide could not take the water fast enough, consequently it backed all over the flats toward Ebervale. Eventually a cave-in of the bank, which was about eighteen feet high, occurred in this narrow place, completely blocking back the water, and the pressure from this back water became so great that it broke through the bank south of the old bed of the creek, and also south of the new dam, taking everything before it into the mine breach. Nothing more could be done this Sunday night, as the rain was still coming down in torrents.

On the Monday morning, which was a bright, clear day, land owners, operators, superintendents, and engineers came there for consultation, and came to the conclusion that it would be useless to dam the water again until the channel was completed.

A larger force of men was put on, and for the next five days and nights a force of about five hundred men was engaged at widening and deepening the channel and building dams.

After great efforts, the channel and dams were completed by Friday afternoon, and the water turned into its new course.

By this time the water had filled Harleigh, No. 3, and was running into Ebervale through an old gangway that was foolishly connected years gone by, filling that mine for one hundred and fifty feet vertically. It was esti-

mated that about two billion gallons of water had found its way into the Ebervale mines during the nine days the creek ran in.

The mines could have been cleared of this water in six or seven months, but while the land companies and the coal companies were discussing who should bear the expense of this pumping, the greatest rain storm of twenty years passed over this region. On the 4th day of January, the rain came down in sheets, and by Monday night the Black creek was overflowing its banks again in several places east and west of the new channel. The back water west of the channel found its way back through the old channel bed into the same breach hole, again filling both mines rapidly, and before a dam was built there the pumps of the Ebervale mine on the second lift were covered. These pumps had a capacity of about eight thousand gallons per minute, and it can be seen at a glance that to throw out the water from the Harleigh and Ebervale mines means the expenditure of large sums of money.

The drowning out of these mines is the greatest loss that this region ever experienced, and is especially hard on the Ebervale Coal Company, who had spent about fifty thousand dollars in putting out the mine fire in February, March, and April of the same year.

Since then no work has been done at Ebervale except the taking out of rails, column pipes, steam pipes, &c., which could be reached above the water. The indications are that no work will be done at Ebervale for years, and very little can be done at Harleigh.

This should be a lesson that land-owners and operators would long remember, as indeed it has been an expensive lesson to them. The Ebervale employés have failed to get employment elsewhere this winter, and if it was not for the charity among the employés of this district, they would have suffered the pangs of hunger.

A Miners' Hospital.

In my reports of past years I have frequently called attention to the urgent necessity for a miners' hospital in Hazleton. Notwithstanding my earnest efforts to interest the authorities and the general public in this important matter, but little attention has been paid to it. The press of Hazleton, which, as the guardian of the public interest here, should be instrumental in seconding a proposition as humane as this one, has only advocated the plan in a spasmodic way. I consider our local journalists have been extremely derelict in neglecting this obvious public duty. If the power of the press cannot be invoked successfully in aid of a movement so philanthropic in its nature, and so beneficial to the army of workingmen in my inspection district, I fear it can never be induced to an active support of any measure advanced for the interest of the laboring classes.

In conjunction with the press, the Hazleton public, and even the miners and other mine employés, have scarcely interested themselves in this matter, notwithstanding the fact that such a hospital, if erected here, would be of

wide practical benefit to all persons. I am the more surprised at this noticeable apathy when I reflect that every adult in my inspection district recognizes the extreme necessity which demands such an institution in Hazleton or vicinity.

I have taxed my energies to the utmost to excite a wide public support for this proposed hospital, and I regret that the subject has not received the considerate attention it deserves. Nevertheless, notwithstanding my past failures, I refer to the matter again, trusting that the State authorities, as well as the Hazleton press and general public, may be induced to give the movement a strong financial support.

Hazleton is in need of the spirit which prompted the erection of the hospital at Drifton. The employés of that place know nothing of the hardships due to lack of proper hospital facilities, for within sight of the collieries stands an institution of the kind wanted in Hazleton, a miners' hospital, provided with all the facilities necessary to a speedy alleviation of the bitter agony frequently experienced by injured mine employés.

Some idea of the value of this hospital may be gotten from the report sent me, on my request, for the year 1885:

DRIFTON, PA., *January 25, 1886.*

MESSRS. COXE BROS. & CO.,

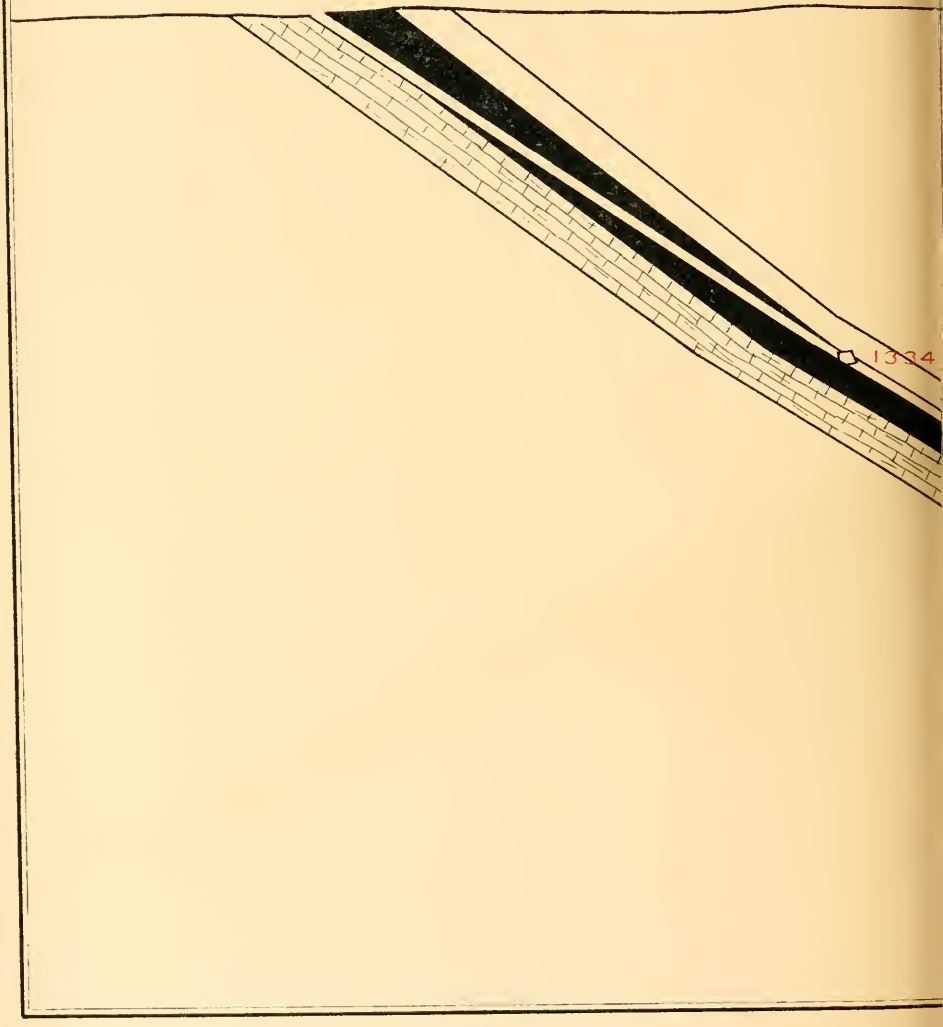
GENTLEMEN: Herewith I submit my third annual report, showing number of patients admitted, discharged, or died; number of days' board furnished, and other information in regard to Drifton hospital during the year ending December 31, 1885:

Number of patients in hospital January 1, 1886,	6
Admitted during the year,	57
Total treated during the year,	63
Single,	33
Married,	22
Widowed,	2
Total,	57
Employés of Coxe Bros. & Co.,	40
Outsiders,	17
Total,	57
Discharged, cured,	43
Discharged, improved,	1
Discharged, unimproved,	1
Died,	11
Remaining December 31, 1885,	7
Total,	63

Slope No 2

Cross Sectio

Local



BERVALE.

Showing

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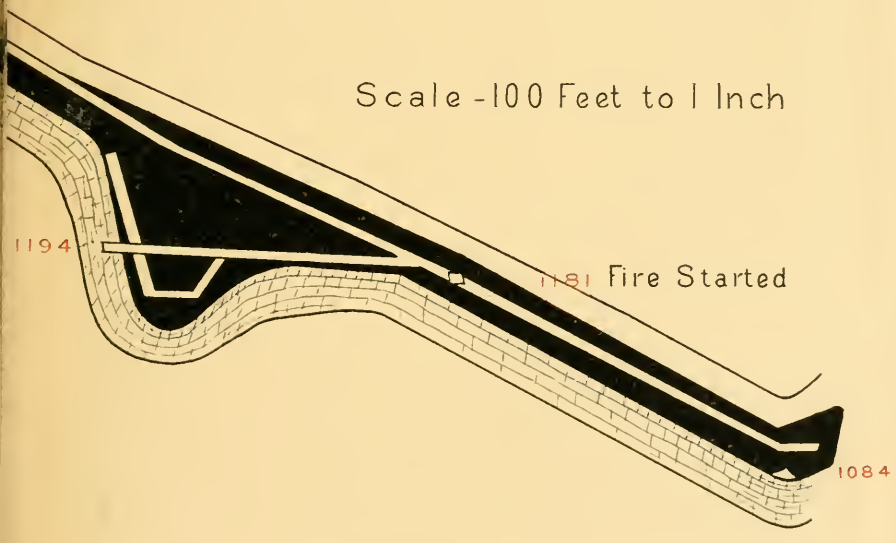


Number of days' board furnished to the sixty-three patients during the year,	2,717
Number whose board was charged to accident fund,	32
Number who paid their own board,	25
Total,	57

Average time the fifty-six discharged and died were in the hospital. . . . . 52¼ days.

Of the eleven who died, one lived seven hundred and eighty-nine days after admission; one lived nineteen days; one lived seventeen days; one lived ten days; one lived six days; the other six died within forty-eight hours after admission.

Nativity of the Fifty-Seven Patients Admitted.

Hungary,	14
Pennsylvania,	11
Ireland,	8
Austria,	6
England,	4
Wales,	3
Italy,	3
Poland,	3
Germany,	2
Denmark,	1
Scotland,	1
Russia,	1
Total,	57

Residence of the Fifty-Seven Patients Admitted during the Year at Time of their Admission.

Drifton,	14
Beaver Meadow,	8
Latimer,	7
Freeland,	5
Tomhicken,	5
Derringer,	4
Hazleton,	2
Ebervale,	2
Butler Valley,	1
Gowen,	1
Stockton,	1
Harliegh,	1
Jeanesville,	1

Jeddo,	1
Woodside,	1
Oakdale,	1
Buck Mountain,	1
Mount Pleasant,	1
Total,	57

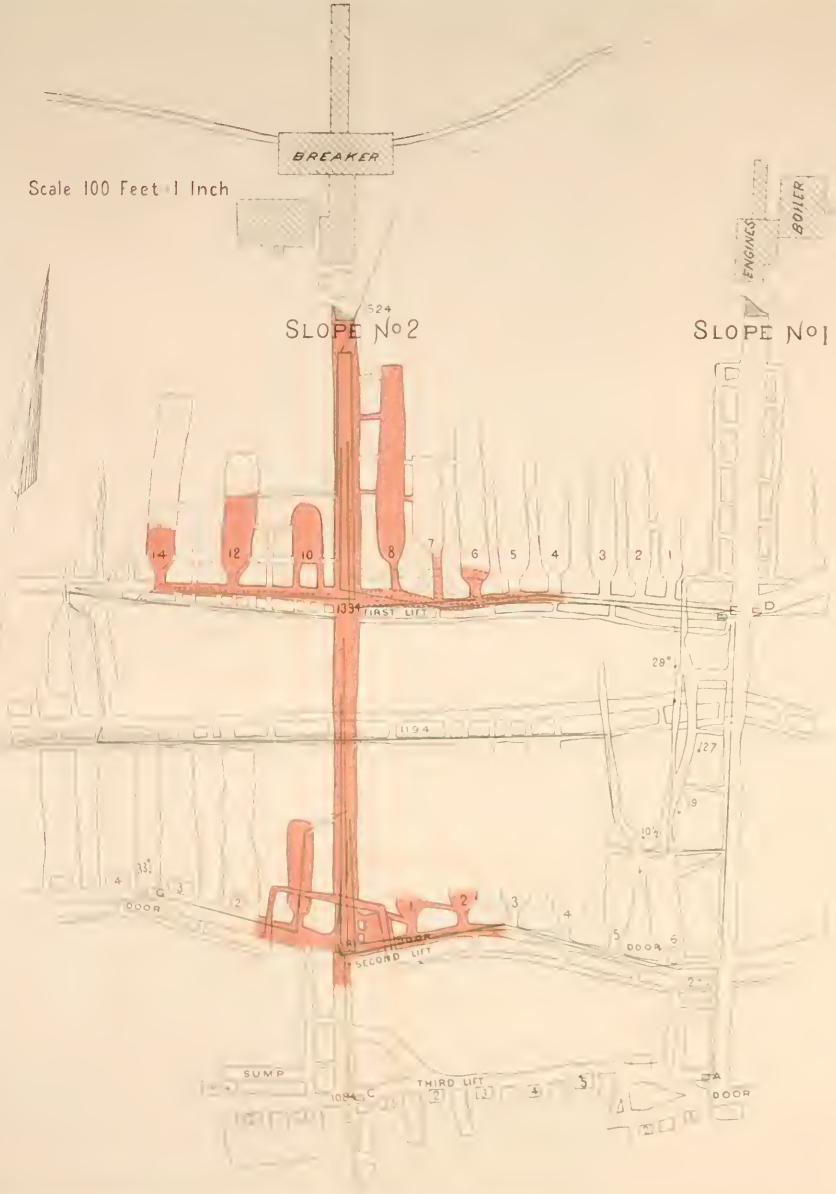
Total number admitted to the hospital since it opened September 1, 1882, 211.

Respectfully submitted.

(Signed,) H. D. MILLER,
Superintendent.

EBERVALE - SLOPE No 2.

Showing Location & Extent of Fire.



Reference

Green Line - Gas Pipe & Hose

□ *Pumps*

Tinted Portion - Extent of Fire

Broken Lines - Holes Drawn to Fight Fire

TABLE OF COMPARISON, *showing the yearly and total production of each company for the last five years, the number of lives lost, and the average amount of coal produced by each company per life lost.*

PRODUCTION.	1881.	1882.	1883.	1884.	1885.	Total production.	Lives lost.	Tons per life lost
A. Pardee & Co.,	686,432	673,627	659,151	543,164	530,806	3,093,280	25	123,731
Coxe Bros. & Co.,	534,764	547,529	643,034	805,538	893,487	3,424,352	27	126,828
Lehigh Coal and Navigation Company,	414,398	419,189	474,175	533,956	598,905	2,440,623	22	110,937
Linderman, Skeer & Co.,	324,250	429,577	518,308	426,582	440,552	2,140,754	18	118,931
G. B. Markle & Co.,	413,820	472,635	499,068	358,197	397,553	2,141,273	15	142,751
Upper Lehigh Coal Company,	387,842	365,180	390,069	360,166	373,491	1,876,648	11	174,604
J. Leisenring & Co.,	254,551	337,427	399,433	355,141	409,937	1,756,489	14	125,463
J. C. Haydon & Co.,	215,100	242,379	248,904	215,249	245,126	1,166,758	6	194,459
Pardee Bros. & Co., Lattimer,	254,754	239,032	212,151	235,785	216,281	1,158,003	6	193,000
Ebervale Coal Company,	198,825	257,383	226,365	173,907	150,559	1,007,039	10	100,704
G. H. Myers & Co.,	178,679	185,074	198,176	191,682	189,193	942,804	13	72,523
M. S. Kemmerer & Co., Sandy Run,	136,085	181,759	188,418	147,174	158,720	812,156	2	406,078
Pardee Sons & Co., Mt. Pleasant,	146,691	143,373	190,837	139,139	146,229	766,269	10	76,626
William T. Carter & Co., Coleraine,	138,187	153,360	169,469	169,950	128,552	759,518	5	151,903
Lehigh and Wilkes-Barre Coal Company,	116,561	135,605	148,402	132,784	107,657	641,009	8	80,126
C. M. Dodson & Co., Beaver Brook,	98,028	99,367	82,250	138,162	159,115	576,922	1	576,922
C. Pardee & Co., Hollywood,	125,141	125,841	149,437	100,410	94,249	595,076	6	99,179
Stout Coal Company, Milnesville,	142,405	120,793	93,582	79,902	101,951	538,683	2	269,341
Buck Mountain Coal Company,	120,719	108,906	75,152			304,777		
Kemmerer & Co., Harleigh,	94,755	88,667	66,801	96,302	86,603	433,128	5	86,625
M. S. Kemmerer & Co., Pond Creek,	32,822		39,486	50,750	45,494	168,552	1	168,552
J. S. Wentz & Co., Black Ridge,	21,754	63,694	4,072		10,966	100,486		
J. S. Wentz & Co., Hazle Brook,				20,295	50,081	70,376		
Total production,	5,037,948	5,360,497	5,666,767	5,274,227	5,535,543	26,874,982	207	129,830
Average number of days worked,	225	221	221.9	184.5	208.6			

BENEFICIAL FUND.

Second Annual Statement of the Lansford Organization.

Below will be found the second annual statement of the Lansford Beneficial Fund, supported by the Lehigh Coal and Navigation Company and its employés, for the year 1885. A glance at the figures will show what benefit the employés derive from it:

MONTHS—1885.	CONTRIBUTIONS.		Total contributions.	Benefits paid.	Expenses.	Total benefits and expenses.	Cash balance.
	Employees.	Company.					
Balance Dec. 31, 1884,							$7,941 92
January,	$814 66	$742 48	$1,557 13	$1,315 74	$40 81	$1,356 55	8,142 50
February,	614 71	657 45	1,272 16	1,433 13	40 00	1,473 13	7,941 53
March,	583 26	583 73	1,166 99	1,603 08	45 19	1,648 27	7,460 25
April,	602 02	656 67	1,258 69	1,158 03	46 00	1,204 03	7,514 91
May,	752 01	884 65	1,636 66	1,149 33	49 47	1,198 80	7,952 77
June,	801 36	923 96	1,725 32	1,182 11	41 43	1,223 54	8,454 55
July,	785 66	881 02	1,666 68	1,101 64	40 00	1,141 64	6,979 59
August,	884 21	1,098 17	1,982 38	1,159 68	54 25	1,213 93	9,748 04
September,	888 03	1,127 74	2,015 77	1,598 39	41 68	1,640 07	10,123 74
October,	925 78	1,245 69	2,171 47	1,416 58	44 00	1,460 58	10,834 63
November,	951 02	1,195 50	2,146 52	1,304 02	43 19	1,347 21	11,633 94
December,	853 66	1,017 97	1,871 63	1,367 05	40 00	1,407 05	12,098 52
	$9,456 37	$11,015 03	$20,471 40	$15,788 73	$526 02	$16,314 80	$12,098 52
Interest to Dec. 31, 1885,							376 56
Balance on Dec. 31, 1885,							$12,475 08

The fund is maintained by a contribution by the company of one cent per ton on the whole production of its coal mines, and a monthly contribution of one per cent. of the earnings of all inside men and one half per cent. of the earnings of all outside men.

In case of accident, it pays monthly half the average earnings of employés; in case of fatal accidents, half of the average earnings is paid to the nearest relative of the deceased, in addition to thirty dollars for funeral expenses.

It can be seen by this statement that the company, during the year 1885, contributed over fifteen hundred dollars more than the employés toward this fund. During 1884 and 1885, the company's contributions exceeded those of their employés by over twenty-five hundred dollars.

This company is entitled to great credit for their generosity toward their employés who are victims of the numerous accidents in and about the coal mines.

The amount paid in benefits during the years 1884 and 1885 was twenty-five thousand and fifty-five dollars, leaving a balance in the treasury, December 31, 1885, of twelve thousand four hundred and seventy-five dollars.

The amount paid to the sufferers from accidents during the two years equals the earnings of forty-two men for one year at fifty dollars per month, or six hundred dollars per year.

By looking at the figures in this light, one can see the great amount of good done by this beneficial fund, operating only under one company, who

only produce about one thirtieth of the total amount of anthracite coal mined. If this system, or a similar one, were adopted by the coal companies and their employés, each party paying on this basis, the magnificent sum of over three hundred and seventy-five dollars per year could be distributed among the suffering classes about our coal mines, and also leave a yearly surplus of about one hundred and ninety thousand dollars.

The new anthracite mine law went into effect the first day of July, 1885, and has, on the whole, operated very smoothly. Yet there are a great many points that have not been enforced or complied with thus far, but I expect that by the first day of July, 1886, the provisions of the new law in general will be carried out by the several companies.

The only real stumbling-block thus far in this district is the prop section, which, in effect, says that the companies shall deliver props and timbers to, or as near as practicable to, the face of each working-place *free of charge.*

If our wise legislators had not added the words "free of charge" to this section, the companies would not have objected. It is very doubtful whether any Legislature has a right to say what charges a company can make, and what charges they cannot make.

In my opinion, the prop law, as it is generally called, is as essential as other parts of the law, as it has a tendency to reduce accidents from falls; and, as about fifty per cent., at least, of all the accidents are from falls, any part of a law that has a tendency to lessen them is of great value.

A large number of companies in this district are sending in the timbers as required by law; others are shielding themselves behind the technicality that the miners have not requested them individually to send in their props, also giving length, number, and size of the desired props. I think this is a poor excuse, as the meaning of the law undoubtedly is that all companies and parties interested shall live up to its spirit

Yet I don't think this part of the law can be enforced until the men individually make a formal request, stating the number, size, and lengths of props needed. If the employés would do this, I don't think that there is a company in this district that would refuse.

The cost of cutting and loading these props would only be a small fraction additional to the cost per ton, and the companies are only fighting it because the law says they must do a thing that they think unconstitutional.

Thus far the men are very backward in complying with the parts of the law that have a direct bearing on themselves. There are a large number of provisions in it that they have ignored thus far. The attention of a large number of them has been called to the several provisions, but so far with very little effect.

A Statement of the Amount and Cost of Lumber used at some of the Mines.

The amount of props and timber used in and about the anthracite coal mines is enormous, and to get at the accurate account of the quantity used and the cost thereof, I made inquiries of several superintendents of this district, and in response a few of them sent me the actual statements from their books.

Mr. C. Pardee, superintendent for Pardee, Sons & Co., writes me that during the year 1885, the following amounts of the different kinds of lumber were used at the Mt. Pleasant colliery:

348, 677 feet of prop-timber, calip measure.
66, 674 feet of logs, calip measure.
163, 125 feet hemlock lumber.
13, 375 feet hard wood, car lumber.
3, 020 mine sills, each about six feet long.
13,040 feet 4-4 yellow pine boards.

The whole of the above cost the company on cars at the colliery ten thousand one hundred and ninety-six dollars and fifty-eight cents, which is equal to about 7.8 cents per ton for all the coal sent to market.

Mr. Albert Leisenring, superintendent for the Upper Lehigh Coal Company, informs me that the following amount of lumber was used at No. 4 colliery during the year 1885:

145, 589 feet lineal of props.
228, 159 feet of hemlock lumber.
9,176 feet white pine lumber.
6,772 mine sills, about six feet long.
11, 883 feet hard wood, car lumber,

At a cost to the company delivered on cars at the colliery, of eleven thousand dollars and seventy-nine cents, which is equivalent to about 6.5 cents per ton for marketed coal.

Hon. E. B. Coxe writes that the amount of lumber used at their Nos. 1 and 2 at Drifton, during the year 1885, was—

163, 483 feet lineal of props.
353, 636 feet of lumber.
8, 997 mine sills, each about six feet long.

Not having the complete data, and as most of this lumber was cut on the company's land, I cannot here give the actual cost; therefore, cannot figure the cost per ton.

After reviewing the whole mines of this district, and comparing them with those herein stated, I have come to the conclusion that the cost of lumber on board of cars at the collieries of this district is about seven cents per ton on all the coal sent to market. This does not include the lumber used at new breakers. The amount of lumber given as used is correct, as those companies are complying with the prop section, and are keeping actual account of all the lumber used.

By complying with this part of the law, there is no timber wasted, as is the case when the men cut their own timber.

COLLIERY IMPROVEMENTS DURING 1885.

The improvements made in this district during the last year are not extensive, partly owing to the bad condition of the coal business. Yet the improvements that were made were of substantial character.

Improvements Made by A. Pardee & Co.

In No. 8 slope a plane has been completed, over which the coal is to be lowered from the upper workings, and from the strippings to the level of the slope bottoms. From there the coal will be hoisted and taken to Hazleton mine breaker.

An addition has been built to the boiler-house at this place, and ten new boilers added. At Laurel Hill a slope was sunk through the rock to the Mammoth vein on a lower level. The coal was found in good condition as far as developed.

At Cranberry four additional cylinder boilers $33'' \times 30'$ have been put in place, also a set of dirt pockets to hold small coal and dirt that were being washed into the creek.

A new Duplex pump was put in on the fourth lift in Hazleton mine, to throw the water to the surface, equal to 325 feet vertical. The size of the pump is 26″ steam cylinder, 12″ plunger, and 4′ stroke, with a capacity, at ordinary speed, of 1,200 gallons per minute.

Improvements Made at Sandy Run and Pond Creek.

A second lift, with an average pitch of 43°, has been sunk at No. 6 slope, Sandy Run, finding the coal of good quality in the basin. The artesian well has been bored to a depth of 700 feet. The improvements thereat are a lifting or bucket pump, engine, and boiler. It was completed during July, and has proved a great success, supplying the town and boilers with enough pure, fresh water at the driest of seasons.

The improvements at Pond Creek during the year were the completion of Slope No. 2, with hoisting engines, boilers, &c., and the completion of the narrow gauge track for the transportation of the coal from that place to Sandy Run breaker. A 12″ Allison pump has been put in the slope, which will eventually throw the water to the surface through a bore hole. A bore hole for proving the Pond Creek property was put down from the surface over the bottom of Slope No. 2. The drill passed through a five-foot vein of coal, situated 22 feet above the vein now being worked. This hole is being continued deeper. A short tunnel from the old workings cut the new vein in good coal.

Improvements at Harleigh.

The improvement here was a new slope sunk on the Buck Mountain vein, south of the main basin, nearly opposite old No. 2 slope. The slope was put down about 70 yards on an average dip of about 45°. The aver-

age thickness of this vein is from five to six feet. One 11 feet diameter fan, width of blade, 4½ feet, was erected, which, at 60 revolutions per minute, gives about 25,000 cubic feet of air.

Improvements at Jeanesville by J. C. Haydon & Co.

A tunnel was driven from No. 4 basin, south through the anticlinal, into the old No. 2 basin, to the Wharton vein on the south dip. The tunnel was 387 yards in length; size, 9′×12′. The Wharton seam was pierced in a fault, and at present gangways are being driven east and west to prove the coal. The intention is to continue the tunnel, to cut the old Mammoth workings, and to drain the water through the tunnel.

To be enabled to compete with this additional water, a Duplex pump was put in No. 4 slope. The water and steam cylinders have respective diameters of 14″ and 32″, stroke, 48 inches. The capacity of this pump is about 2,500 gallons per minute.

Improvements at Treskow by Lehigh and Wilkes-Barre Coal Company.

The inside slope at No. 7, in the Wharton vein, was sunk 65 feet to the basin. Four new cylindrical boilers were erected, and the boiler-house was enlarged. A little east of the breaker a small proving shaft was sunk to a depth of 72 feet, where it cut a two feet vein of coal. The shaft will be sunk to prove the Buck Mountain vein.

Improvements at Beaver Brook by C. M. Dodson & Co.

No. 10 slope was sunk another lift of 75 yards in the Buck Mountain vein. The coal was good all through. Four new cylindrical boilers were erected at the breaker. Finding the Buck Mountain in good shape at this place was a lucky thing. The existence of this vein in workable order was doubted by all the knowing ones, but the perseverance and tact of the superintendent and mine foreman proved they were nothing else than false prophets.

Improvements at Milnesville, Stout Coal Company.

An addition was built to the breaker, including screens, roll, &c., which will add about 25 per cent. to the capacity of the breaker. An engine-house, with a 30-horse-power engine, was erected at No. 1, to hoist the coal from the stripping. Also, a boiler-house and four new cylindrical boilers were put in place to supply the hoisting and pumping engines with steam. About 100,000 cubic yards of surface were removed from No. 1 basin.

Improvements by the Lehigh Coal and Navigation Company.

A large number of improvements were made at No. 3, Nesquehoning. There were 1,375 feet of the west gangway from the old No. 1 Tunnel re-opened. This gangway was driven in a portion of the Mammoth vein. Two rock curves from No. 1 Tunnel were driven to re-open the old gangway in the Primrose. No. 1 Drift gangway in the Mammoth on the south dip was re-opened for 1,430 feet.

The air hole from No. 1 Tunnel level to the surface was enlarged from

16 feet area to 30 feet area. A new fan, 21 feet in diameter, was put in place. The width of the vanes is 7 feet. The fan is driven by an 18×32 engine. Four new cylindrical boilers, 32″×36′, were erected with the fan and engine-house, making a very complete plant.

No. 4.—The improvements at this colliery consist of a new outlet airway, size 8′×10′, in the vicinity of and connecting with old No. 7 slope, at the top of which is placed a new 21-foot fan to ventilate the east gangway, third lift. This gangway has passed around the synclinal axis ingood coal.

No. 5.—The east gangway in the Primrose has passed the synclinal axis, where an intake airway of good size was driven to the surface, which has greatly increased the ventilation, making No. 5, as far as ventilation is concerned, equal to the majority in the district.

No. 6.—The improvements here consist of sinking a shaft from the surface to the Red Ash vein, a distance of 995 feet. The dimensions of this shaft are about 37×14 feet, which is timbered from top to bottom by 12×12 yellow pine timber, placed from 3 to 5 feet from center, and planked closely all around. The sinking and timbering of this shaft were all done by the day, under the special supervision of William H. Evans, the general inside foreman for this company. He took great pride in having all the timbering done in the most approved manner, and this work reflects great credit on him for the successful and speedy way it was carried out. Great progress was made in the sinking, when it is considered that they had to timber the shaft about every week on account of the great dip of the strata. He is commended, also, for the care he took of his men, as only one man was injured during the whole operation. That man had his leg fractured by a piece of rock falling out of the side a few feet above him. From the bottom of the shaft a tunnel has been started north to cut the Mammoth seam, also a short tunnel is being driven to cut the Red Ash on the south side. The sinking of each mouth was as follows, including the timbering:

Prior to April, 1884, 35 feet were sunk, and from the solid foundation at that place, a thick stone wall, laid in cement, was built to the surface as a foundation for the head framing. The sinking proper dates from April 1, 1884:

From April 1, 1884, to	May 1, ...	49	feet were sunk.
	May, ...	55	
	June, ...	44	
	July, ...	40	
	August, ...	50	
	September, . . .	51	
	October, ...	57	
	November, . . .	43	
	December, . . .	39	Sinking was delayed this month by putting in a new pump.

1885—January, ...	65	feet were sunk.
February, ...	56	
March, ...	67	
April, ...	56	
May, ...	47	
June, ...	51	
July, ...	67	
August, ...	51	
September, . . .	61	
October, ...	11	Sunk in 1 week.
	960	

I consider this rapid sinking, as everything was finished when the shaft reached its terminus. As all the timbers and guides were permanently put in while sinking, I must say here that the new mine law has made the sinking of shafts much safer than it was heretofore.

The second outlet to this shaft has been sunk in the Primrose, a distance of 1,400 feet, leaving still a distance of about 230 feet to reach the level of the bottom of the shaft. The size of this second opening is $9' \times 16'$.

The pumping machinery used in sinking this opening consists of one No. 49 Cameron pump, 16″ steam, 7″ water cylinder, with 18″ stroke. This pump is located 600 feet below the No. 6 Tunnel level with a vertical lift of 400 feet, and a No. 5 Cameron pump, 12″ steam and 5″ water cylinder, 14″ stroke, located near the bottom, with a vertical lift of 330 feet. These pumps are run by compressed air, supplied by one Allison air compressor, size 22″ steam and 24″ air cylinder, and 24″ stroke, running 30 revolutions per minute.

The compressor is located near No. 2 shaft, and at present 8 boilers, $36'' \times 36'$, in addition to furnishing steam for the shaft hoisting engines with 60 pounds' pressure, furnishes, under the present circumstances, the required 70 pounds' air pressure for running the above pumps.

The exhaust air from these pumps and a three-foot fan located on the surface affords sufficient ventilation. The water from the bottom of the shaft is hoisted by water tanks.

No. 9.—The workings of this colliery continue in good condition. At Springvale a new tunnel has been driven south a distance of 416 feet, to cut the north dip of the Dry Hollow or Sharp Mountain basin. The vein was found in excellent condition and the coal of superior quality. This tunnel develops a large area of virgin coal.

A new locomotive was added to facilitate the transportation of the coal from Springvale to No. 9. This additional improvement will greatly increase the production of No. 9 colliery.

Improvements by Coxe Bros. & Co.

CROSS CREEK COLLIERY SLOPE, No. 1.—A number of gangways have been driven through the faulty Buck Mountain vein, area extending under the gently sloping hillside south of Drifton toward Oakdale, opening a large amount of coal. A tunnel has been started in the Second lift on line of slope No. 1; it has crossed the anticlinal between slopes No. 1 and No. 2, and the Buck Mountain vein on north dip. It will probably reach the Wharton and Mammoth veins in the latter part of 1886. Gangways have been continued and breasts started in the Gamma vein, proving this vein so far of excellent quality. This being the first opening on that vein ever made in this region, as far as known, it is a matter of general interest.

Mr. Coxe gave me the following explanation how the discharge pipe was fastened in the bottom of the hole, with a blue print of part of the hole and "Y." The hole was bored down the rock and squared off, as shown in the blue print; a series of holes were bored, by means of a hand diamond drill, which were all inclined toward the center. The outside edge of this series of holes, which were close together, is the outside line of the oakum on the print. In this way we were enabled to get a very good tapering hole, although we made no effort to have it smooth on the outside, as there was no need of its being so; in fact, it was better for it to be rough so that the oakum could pack into the crevices and stick in better. The upper end of the hole where the diamond drill holes stopped was then carefully faced off, a lead washer put on, and the bushing squeezed up against the lead washer. The oakum was then tamped in carefully upon the bushing so hard that the steel tamping bar would almost jump back as against rock. A facing of perfectly true white pine, containing no knots, was put in between the rock, oakum, and bushing on one side, and the cast-iron ring marked "F" on the other. The "Y" pipe was then put in, and the whole screwed in by means of a screw to the column. There are eight stud bolts, not shown on the blue print, which hold the ring "F" to the "Y" pipes. The column which supports "Y" piece has on it two valves, to which hose is attached so that it can be used in case of fire, and also to empty out the column whenever it is necessary. One side of the Duplex pump discharges into one arm of the "Y," and the other side into the other. The pump is easily disconnected from the "Y" pipes by simply slacking the bolts that fasten the "F" pipes to the two valve chambers on the top of the pump. As soon as these bolts are slacked, the "F" pipes can fall away from the "Y" pipes, and there is no trouble in disconnecting it.

CROSS CREEK COLLIERY, No. 2, has its workings principally extended in the bottom lift; large turn-outs have been made, and the coal proves to be of superior quality. Two thousand yards of gangway are driven ready for breasts, and an airway is completed to the top of the anticlinal, between Slopes No. 2 and No. 1, which developed an undisturbed vein for six hun-

dred and forty feet, or over half a million tons of breast coal on the gangways already driven. A rock slope is being sunk over the top section of the present hoisting Slope No. 2, to give slope a better grade.

CROSS CREEK COLLIERY, No. 3.—Repairs have been made during the last couple of months, and a new hoisting slope been started on the south dip, through which the coal will be hoisted and brought over a surface road to Breaker No. 2.

BUCK MOUNTAIN COLLIERIES came into the actual possession of Coxe Bros. & Co. during the year 1885, and work was at once commenced to open and secure Slopes No. 5, No. 7, and No. 4, as the workings give a natural drainage for seventy to eighty per cent. of all coal which remains unmined at the Council Ridge collieries, (Eckley.) This connection was made during the night of December 31, 1885, when Coxe Bros. & Co. obtained control of the Eckley mines. All pumping in No. 2 slope was at once discontinued, and on the day when the disastrous floods were drowning so many collieries in this region, the water flowed from Eckley through the Buck Mountain works, and in the Slope No. 4, of Buck Mountain gangways, water ran at the rate of seven hundred thousand gallons per hour, and this stream, increased by additional water from Buck Mountain, No. 4 and No. 7, was flowing five feet high through the gangway at foot of Slope No. 5. By investing capital in tunnels instead of in boilers, hoisting engines, and pumps, a large amount of coal will be made available, which is acknowledged to be the best from the Buck Mountain vein.

BEAVER MEADOW is developing steadily. Forty-eight thousand cubic yards were moved in the stripping, and about twenty-one thousand cars of coal quarried. The main hoisting slope was completed, its south track being one thousand two hundred and eight feet long, and the north track six hundred and eighty-eight feet long. Three cars are hoisted by a barney at one time, which brings the capacity of this slope to about nine hundred cars per day, so that the production of this colliery is not limited by its hoisting capacity. An artesian well is sunk for regulating the water-supply.

TOMHICKEN COLLIERY.—The developments have been pushed in the old workings promising more coal. About half-way between this colliery and Derringer, a new opening has been made which will be known as Tomhicken, No. 4. A shaft is sunk six to seven yards in rock, substantially walled through the covering sand and clay. Dwelling-houses have been erected, and boilers and engine put in place. A surface railroad of about two miles is in progress from here to old Tomhicken to transport the coal to the breaker.

DERRINGER COLLIERY.—The breaker, which was burnt down in 1884, was rebuilt, and resumed operation in the latter part of March. The workings in the lower level have been extended, and a tunnel is being driven southward on this level to strike the Buck Mountain seam. The coal from this

level will be hoisted through a shaft to the present working level within one hundred yards of bottom of breaker slope. A hole was drilled from the surface to the second lift in the center of projected shaft, through which the rope will be run from the over-ground hoisting engine. This hole is cut by the tunnel underneath; it serves at present as an air-hole for this tunnel, and will save the pumping when the shaft is being sunk.

Gowen, No. 4.—This slope is really a part of the Gowen mine, but is delivering its coal over a surface railroad, which was built at a cost of twelve thousand dollars to the Derringer breaker. The slope was sunk to the basin of the Wharton, and gangways, which have been driven east and west, show that the basin rises in both directions. The vein is in a fair condition, the coal of good quality.

Gowen Colliery.—Nothing new or of any special interest at this mine. All work done during 1885 merely continued previous developments. A drift was driven southward into a large piece of flat coal in the West Valley, (Roberts Run,) and a tunnel was driven northward to reach the Buck Mountain vein, in which several hundred yards of gangway have been driven dividing the north dip above water level into two sections. This tunnel has penetrated two veins overlying the Buck Mountain, and a large amount of coal will pass through these openings, which start from the surface. A surface railroad has been built to connect with the existing system of tracks. A large boiler-house, containing six boilers, has been built in a central location between slope and breaker to replace boilers which, at present, stand at the breaker and at the slope.

General Remarks on Accidents.

The total number of fatal accidents does not vary much in this district. By looking at the reports for the last five years, it can be seen that the number of deaths varies from forty-seven to thirty-eight, making an average loss of 41.5 per year.

With proper regard for the safety of lives on the part of mine management, and especially among the employés themselves, the above figures should be greatly reduced, and I hope that the following years will show a decrease of the number of fatal accidents in this district; in fact, I have no doubt of the result, if the employer and employé will make an effort to live within the limits of the law, as its provisions are very general, covering most all causes of accidents.

Accidents from falls of different kinds are the most numerous this year as in the past, but I am happy to say that the percentage of such accidents has been greatly reduced in this district.

In years gone by, the percentage was from sixty to seventy-five per cent. of the total number of accidents. During the year 1885, nineteen persons lost their lives through falls, equal to forty-five per cent. of the total number. Of the nineteen lives lost in this district through falls, fourteen of the victims were miners, four miners' laborers, and one driver. Of these

fourteen, nine came to their deaths by not taking the proper care of themselves while engaged at their dangerous occupation.

Of the four laborers that were killed by falls, one met his fate through his own carelessness, and another through the carelessness of the miner. The driver lost his life through his own folly, and partly through a miner's neglect.

Of the seven killed by mine cars, four came to their end by sheer recklessness, which is characteristic of this class of employés in and about coal mines.

One life was lost through an explosion of carbureted hydrogen gas. This accident occurred in direct violation of the law on the part of the mine foreman, who did not have the working-place examined and reported safe before the man entered his breast. The jury brought in a verdict, "that this man lost his life through the gross neglect of the mine foreman." I have returned the case to court, but it has not yet been disposed of.

The three lives that were lost through premature blasts can be classed among the great number that lose their lives every year through the most daring recklessness, as there is no more dangerous and risky proceeding ever tried in a coal mine than to drive in a tight cartridge with the butt end of a drill.

The three lives that were lost by machinery in breakers are proof that no amount of fencing in of the dangerous parts of machinery, and no amount of care on the part of the management, can always guard the employés from danger, unless they themselves take the proper precaution. I can here certify that if these three persons had used ordinary care they would have been saved.

The three persons who lost their lives through boiler explosions, came to their deaths through the incompetency, or, perhaps what is still worse, through the carelessness of the boiler examiners, who perjured themselves by swearing that they were competent to examine mine boilers, or by swearing that the boilers were examined when they were not. The jurors in each case failed to point out the guilty party.

After this review of the causes of fatal accidents, I feel confident in saying that at least fifty per cent. of the forty-two lives lost in this district last year would not have a record if the employés had cared for their own safety as men under the circumstances should.

Perhaps if the managers of our coal mines were more positive in their instructions to their employés, many lives would have been saved. If I should enumerate the one hundred and fifty-eight non-fatal accidents, I am confident that the same reasoning and proportions would hold good.

Fatal Accidents by Falls.

ACCIDENT No. 1.—Daniel and Peter Cambell, Irish, miners, aged respectively twenty-one and eighteen years, were killed by a fall of slate at Upper Lehigh, No. 5, on the 5th day of January.

The Cambells were brothers, and were engaged working a breast. Although comparatively young, they had worked one breast before. This breast had a very bad roof, necessitating many props, which had to be kept right up to the face of the coal.

In my examination of the place after the accident, I could not find much fault with the mode of propping, yet it was not equal to the propping of old and experienced miners, or the accident would not have happened.

These young men were hard pushed for coal to keep up their trips; and to do that they had gone in before the usual time that morning, as a miner in the next breast testified that at about seven o'clock he heard them blasting a shot. Some time afterward, the driver left a car at their chute, and called on them, as was his custom, to come to load their car. When the driver came back for the car, he found it empty. He then made inquiries of a miner named Vearplot, who worked near them, as to why the Cambells hadn't loaded their car. Vearplot then went into their place to find out the cause of their not loading, and was horror-stricken to find the men dead under large pieces of slate. After hearing the evidence, and also closely examining the place, I came to the conclusion that the blast they had fired at about seven o'clock in the morning must have displaced at least two of their props, and while in the act of replacing them, the slate fell. This accident should be a warning to all miners not to attempt to stand props which have been knocked out by a blast until the place has settled, been examined, and found safe.

Accident No. 4.—Patrick Conyngham, Irish, miner, aged about seventy-five years, was killed by a fall of coal at the No. 6 stripping at Yorktown on the 5th day of January. He was engaged blasting coal for the Hungarians, and, with a little care and forethought, could have done the work with safety, as he was an old and experienced miner, and considered a good workman. At the time of the accident he was tamping a hole, thus shaking the overhanging coal, when a large piece fell from a height of about five feet and struck him on the head, fracturing his skull.

Accident No. 5.—Michael Nash, Italian, miner, aged thirty-five years, was killed by a fall of slate at Laurel Hill in the Wharton seam on the 5th day of January.

Deceased, with a miner named Charles Schraunn, was engaged robbing pillars, a very dangerous work at best, and indeed this was one of the safest places for that kind of work, as the seam is thin, being only about five and one half feet in thickness.

These men had succeeded in taking out the pillars to the gangway stumps, and at that place had put up a large number of props, but by an oversight on their part, they did not detect a loose piece that hung between two props, which fell and knocked out several props, allowing a large flake of slate to fall on deceased and Schraunn, injuring the latter slightly.

The mine-foreman, James Durkin, had been at this place a few hours prior to the accident, and saw nothing unusual, but warned the men to be careful.

ACCIDENT No. 12.—Michael Dougherty, Irish, miner, aged — years, was fatally injured by a fall of clod at Yorktown, No. 5, on the 15th day of February, and died at the Bethlehem hospital.

ACCIDENT No. 15.—Conrad Deisenroth, German, miner, aged forty-two years, was instantly killed by a fall of coal at Hazleton, No. 6, on the twentieth day of March. Deceased was working a breast in the Mammoth, and, by the evidence of his partner, had fired a blast, and returned immediately to see what the results were. He then commenced to bar down some large pieces of hanging coal, when suddenly a large mass of it fell on him.

Deceased was very injudicious in his work of barring. If he had reflected a few moments, he would readily have seen that there was no avenue of escape for him if the coal fell.

When I examined the place the following day, I found a great deal of partly loose coal hanging, and thought that no sane man would try to bar it down, when he could put a blast in the solid and bring it all down with the other coal. I must say that had deceased taken the necessary precaution, we would not have had to chronicle this terrible accident.

ACCIDENT No. 16.—August Whitebread, German, miner, aged thirty-four years, was fatally injured by a fall of coal at Eckley, No. 5, on the 20th day of March, and died on the 25th.

This man met his death through sheer carelessness. He had fired a blast and went right back and commenced to bar down the loose coal, when suddenly a large piece fell, which struck him on the head, fracturing his skull, from the effect of which he died as stated.

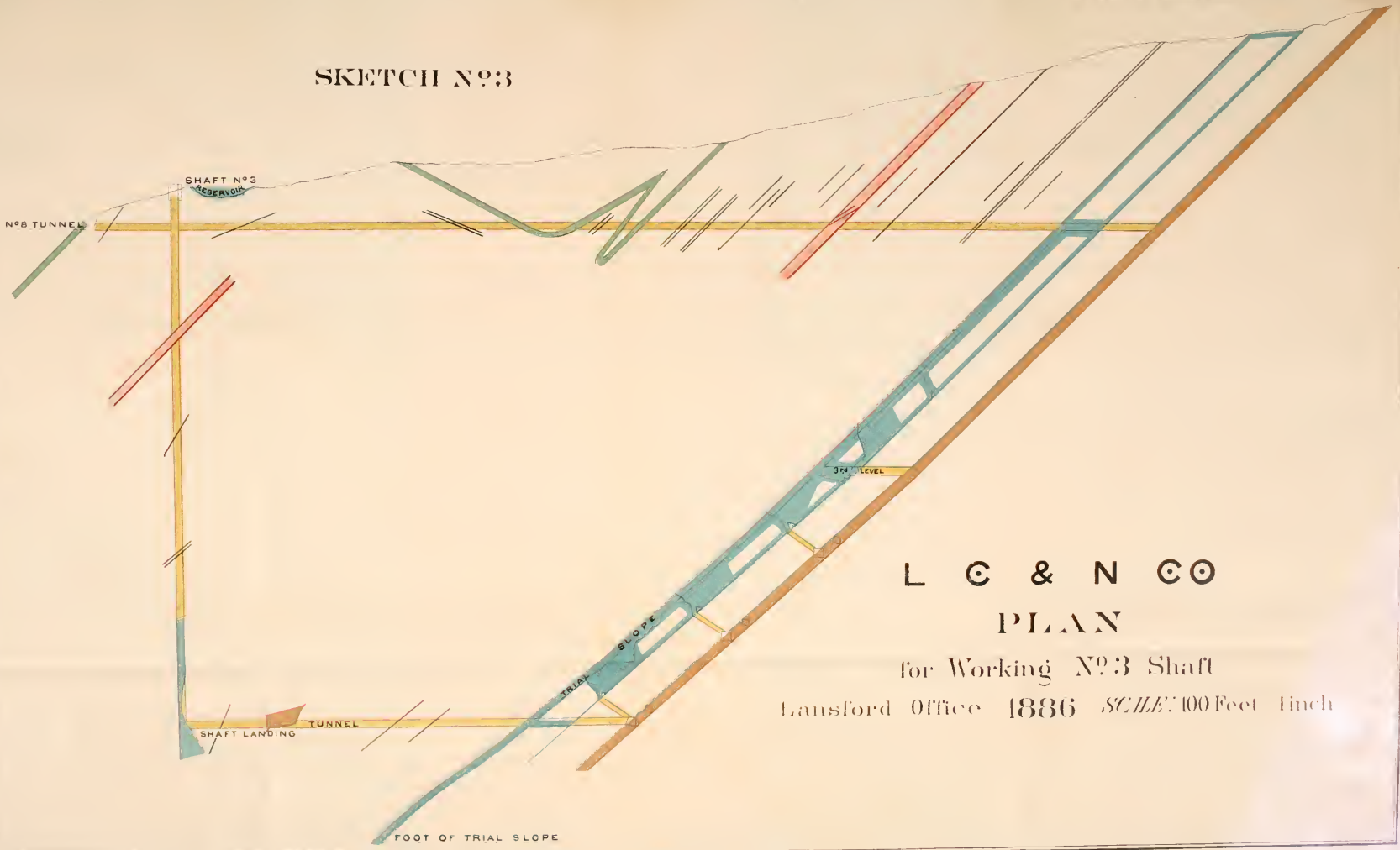
ACCIDENT No. 22.—Alexander Campbell, Irish, miner, aged about forty years, was instantly killed by a fall of clod in the Mammoth seam, at Harleigh, on the 22d day of April.

This is one of those unforeseen accidents peculiar to coal-mining. It could not have been guarded against by any person. Deceased, with another man, was engaged robbing pillars, and while their car was being shifted by the driver, it ran down a grade and got off the track. Deceased's partner and others were called to put it on the track. While thus engaged, a large piece of clod fell from the top, a distance of about thirty feet, killing Campbell instantly, while the other men had a narrow escape and were only saved by the car being struck first.

This is a peculiar accident, as the counter gangway, where it occurred, had been driven for several years across old breasts that had been worked out for nearly twenty years, the roof of which was carefully examined and considered safe all through. A good proof of this was that nothing ever fell on this road during the years it had been in use.

When I examined the place the following day, everything was as still as usual, yet I thought that this fall was a forerunner of something more serious. I inquired of the mine foreman, Griffiths, who is a very competent man, if

SKETCH N°3

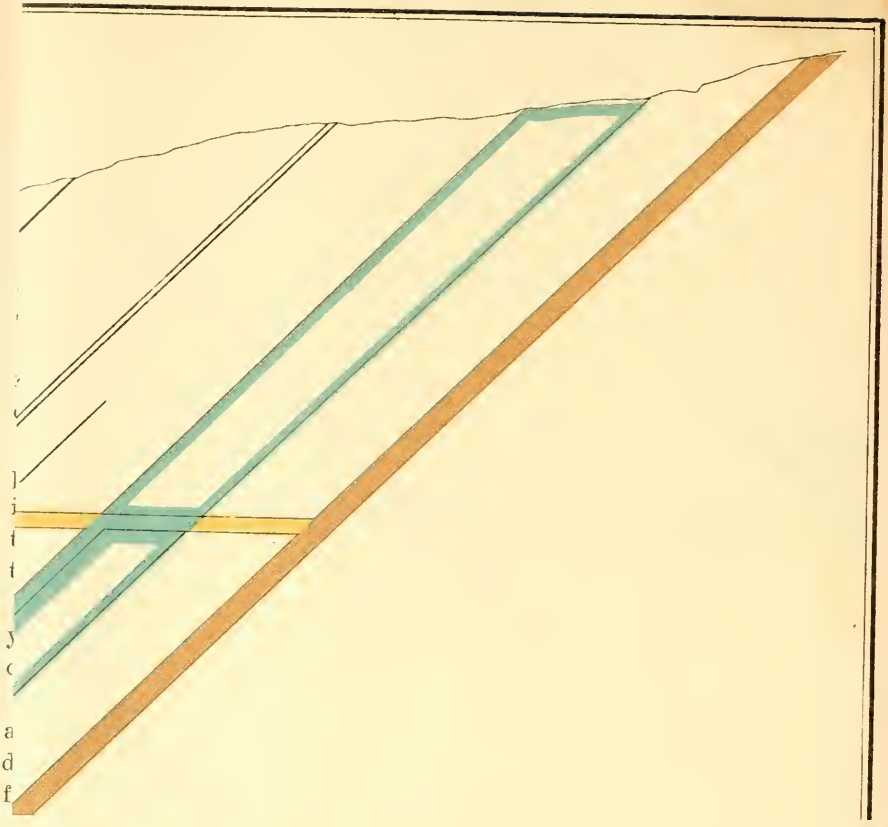


L C & N CO

PLAN

for Working N°3 Shaft

Lansford Office 1886 *SCALE* 100 Feet 1inch



he had noticed any sign of a squeeze in that part of the mine. He answered he had not. We went through a large portion of the place and examined it carefully and detected nothing wrong. I ordered the foreman to watch it closely and report if he found any indication of a general squeeze. In three days he notified me that he detected the indication of a squeeze. I went over again and satisfied myself that a general squeeze was coming. I, therefore, ordered all the men to be taken out from that section of the mine. From that day for nearly four weeks the place worked and finally closed in affecting the whole strata to the surface for four or five acres. This is the first fatal accident in this seam from falls for the last five years, and I think the management deserve great credit for the care they have taken of their men.

I must also say that the old miners of Harleigh are peculiarly fitted for the dangerous work of robbing pillars, which has been nearly the only work done in the Mammoth since the large cave-in of 1877, when two men lost their lives, whose bodies are still in the mine.

Accident No. 23.—Hugh L. Jones, Welsh, laborer, aged twenty-seven years, was instantly killed by a fall of coal at the face of a gangway in the No. 2 slope of Upper Lehigh, on the 23d day of May.

This is another accident that possibly the best care and judgment on the part of the miner could not have prevented. The place where Jones was killed would generally be termed very safe. The coal is strong, the roof good, and place only sixteen feet wide, with an angle of 10°.

The miner had taken a row of opening shots from the lower tier of coal, and while the laborers were loading a car, the miner was drilling a hole on the upper side, expecting to knock down several cars of coal with it. While they were all busily engaged, a large piece of coal, weighing about eight tons, toppled over, killing deceased instantly, and also came near killing the miner and the other laborer.

This accident was caused by a smooth slip running through the coal at right angle with the gangway, which could not have been detected by the miner as about six feet of coal intervened; thus, after the bottom coal was taken out, there was no support for the top.

Accident No. 24.—Josiah Blackwell, English, laborer, aged twenty-four years, was killed by a fall of coal from a pillar at No. 5, Stockton, on the fourth day of June.

Several months prior to this accident an extensive squeeze had taken place in this slope, closing several gangways, and partly closing the gangway where deceased met his death.

Blackwell and a miner named James McGee were sent to load up the loose coal in this gangway, with instructions to take down all loose pieces as they advanced. Afterward the timbering needed was put in by the night gang.

Ordinarily, in strong coal, that practice might be safe, but in this place

the men loading the coal should have been competent enough to do the necessary timbering so they could make the place safe as they went on.

The foreman had visited this place twice that day before the accident, and pronounced the place safe, but he must have erred in judgment as the sequel proves; because when Blackwell and McGee were loading a car, a large piece of coal slid from the side, pinning Blackwell against the car with result as stated.

ACCIDENT No. 25.—Jacob Ulshafer, German, miner, aged fifty-three years, was instantly killed by a fall of a rock boulder at Derringer, in the Buck Mountain seam, on the 25th day of June.

James Slusser, the boss timberman, testified that he called at deceased's breast the afternoon previous to the accident, and saw that deceased had blasted down his top coal. He told him to clear a place for a few props as he thought the place was in need of them. Deceased complied with the request.

The timbermen went there this fatal morning and dug holes for two props. They then went down to gangway to cut them. When they returned with the props, they found that a large piece of rock had fallen. They looked for deceased, who was sitting at the face of his breast a few minutes previous, and found him dead under the fallen mass.

Why he went there no person could testify, as he was all alone when the timbermen left him. He had no business whatever to be at the place where he was killed, as all the propping is done here by company men, as is the case in all of the mines of Coxe Bros. & Co.

ACCIDENT No. 27.—Patrick McGlynn, Irish, miner, was instantly killed by a fall of coal at No. 3, Ebervale, on the 27th day of August. Deceased, Bernard Mulherrin, and John Brislin, three practical miners, were engaged robbing pillars in the second lift gangway of No. 3, and had been at this work for about one year. In my examination, I came to the conclusion that they were good, practical miners, as up to that time they had done their work well to the satisfaction of all concerned, and with safety to themselves.

As they were three miners working together, they did the blasting alternately, one doing the blasting while the other two did the loading; and the man doing the blasting usually looked after the safety of the place, the other two men trusting to his judgment.

The day of the accident, McGlynn did the mining, and after firing a blast, (the only one during the day,) he went back. It was supposed by his partners that he had examined the place, as he came back to them and reported the place safe.

Mr. Nesbitt, the mine foreman, visited the place a few hours prior to the accident, and called the men's attention to the top bench, as he thought it did not look very safe. Deceased answered by saying "It is perfectly safe," as he had examined it himself. The mine foreman took his word for it as it could not be examined without a ladder.

Bernard Mulherrin corroborated the testimony of the mine foreman, and said further that McGlynn was one of the most competent miners in Ebervale, and when McGlynn reported a place safe, he never troubled himself about it.

It is very evident to my mind that had McGlynn made the necessary examination he would have found that the top bench was not safe. It is a rare thing to have any of these benches safe, and they should be always taken down and not left hanging.

The bench that fell was about two and one half feet in thickness. About five tons of it fell without any warning, killing McGlynn, smashing the car and tools, and came nearly killing the other two men that were loading.

Accident No. 33.—Anthony Bertrie, Austrian, miner, aged thirty-five years, was fatally injured by a fall of clod, in the Wharton seam, at Beaver Meadow, on the 23d day of September, and died the following day at the Drifton hospital. In investigating the cause of this accident, I found that deceased was working a breast in very hard coal, to all appearances perfectly safe. Some time previous to the accident he had commenced to mine his top coal first, as the bottom coal was sticking. Above the top coal, which was about five and one half feet in thickness, a black slate about six inches thick was found, which generally came down with the blasts; but the day of the accident the blast did not throw out the coal, when deceased at once commenced to loosen it with his drill. While thus engaged this thin bench of slate fell on him, injuring him internally.

I am in duty bound to say that deceased was not a miner only in name, and his working-place would convince any competent judge of the truth of this statement.

Accident No. 34.—John McGrath, Irish, miner, aged thirty-seven years, was killed by a fall of slate, which knocked him down an old breast in the Wharton, at Mt. Pleasant, No. 4, on the 25th day of September.

As this was a peculiar accident, I will explain it by saying that deceased had driven a piece of counter gangway from breast No. 20 to a point opposite breast No. 22. Breast No. 22 had an average pitch of about seventy degrees, which terminated very abruptly in a flat. To get the coal from this flat the counter gangway was opened. Deceased knocked a small hole into breast No. 22, through which the coal was to be dumped, so it could be loaded with the general mine cars on the main gangway.

When McGrath had driven the hole into breast No. 22, the foreman ordered him to open a breast about sixteen feet wide, and to secure the place by propping it as soon as he had made place for props. Deceased commenced to open the breast the day the foreman had been there, and between him and the laborer they fired about ten blasts that day. The coal slid readily through the opening into the breast below. By the ten blasts he opened the breast to a distance of about sixteen feet.

By the testimony of his laborer, deceased and himself went in early this fatal morning, with the sole intention of making room for the props and putting them in place. When they reached their working-place, deceased examined it and found pieces of slate hanging. He took his drill and pried them down, saying to his laborer that everything was safe, and that he should help him to roll the large flakes of slate away, so they would not slide into the breast among the coal. While engaged at this work a large piece of slate fell, knocking the laborer toward the face, and the miner through the opening into the breast, when he fell to the battery, a distance of about sixty feet. He was taken out dead.

After looking at the place and hearing the evidence in the case, I must say that John McGrath came to his death by neglecting to put in the necessary props in time. If McGrath had had a few props put in the day previous to the accident, the place would have been safe to work in.

ACCIDENT No. 35.—Samuel Carlin, English, miner, aged forty years, was killed by a fall of coal from a pillar, at Hazleton, No. 8, on the 26th day of September.

Samuel Carlin and Frank Burns were working in an old breast which was abandoned twenty years ago. This breast had been worked on the top of the slate, leaving in the four feet, which, in this breast, proved to be about seven feet in thickness. These two men worked this place up successfully for sixty yards, where the face of the old breast ended. Here they commenced to mine from the solid. After going in about fifteen feet they took down the benches, but were not careful to trim the sides down. While loading a buggy, a piece of the top bench fell and struck Carlin as stated. I found that the mine foreman had been in this place a few hours prior to the accident, and he at that time saw nothing wrong. The last blast was fired after he left, and from this blast the danger came.

ACCIDENT No. 36. John Lannon, Irish, laborer, aged twenty-four years, was instantly killed by a fall of the poorman at Lattimer, No. 3, on the 1st day of October.

It can be truly said that the fault of this accident cannot be attributed to John Lannon. Deceased was laboring in a flat breast for a man by the name of David Weber, who gave the following testimony:

"I commenced this breast in September, 1883. I finished blasting my top coal about three months ago, and at that time I trimmed every loose piece down, and can certify that the poorman was solid then. During that time we were loading out the loose coal, and had commenced to blast in the solid a few days previous to the accident. I commenced by blasting out the two-foot. A blast in that brought down the seven-foot, as a slip ran from the two through the seven and poorman. I didn't know at the time that the slip went through the poorman, or I would have kept the laborer back."

In answer to my question, "Why didn't he open in the bottom coal

first?" he said, "that a pile of coal was in the way, and that he was anxious to see how it would do to take the two and seven-foot first."

The mine foreman testified that when the top coal was blasted down, he went up on the coal and examined the roof and found everything safe, as the miner had testified. He admitted allowing the miner to take a cut out of the two and seven-foot, then he should trim all the loose pieces and commence again in the bottom. The foreman and miner erred in judgment by working the top coal first, as these blasts had the tendency to loosen the poorman above.

Michael Morachi, Hungarian, laborer, aged thirty years, was instantly killed by a fall of coal in the B seam, in the Slant, at Drifton, on the 21st day of October.

Deceased was laboring with an old practical miner, who was robbing gangway stumps, a safe work at this place, if the miner had taken the proper precaution. The miner testified that he had fired a blast in the afternoon previous to the accident, went back, made the usual examination, and found the place safe. He then went home. The morning of the accident they went to work and loaded two cars. While deceased and minerwere shoveling some coal toward the track, a piece of coal fell, killing Morachi, and came near killing the miner.

The day following I examined the place, which had been idle since the accident. I found the place in a dangerous condition; two or three carloads of coal on the eve of dropping. I reprimanded the miner severely for his recklessness, though he insisted that he had examined the place the morning of the accident, and thought it safe enough, or he wouldn't risk himself or laborer. If he had examined the place, I must say that his judgment was very poor. The miner was suspended for several weeks.

Accident No. 39.—James Metzgo, Hungarian, laborer, aged twenty years, was killed by a fall of coal at the Yorktown stripping, on the 24th day of November. He came to his death by attending to other people's business. The miner called on the Hungarians to move back, as the top was working. One of the drivers called out that some couplings would be buried. Deceased jumped to get the couplings and was caught by the falling coal.

Fatal Accidents by Mine Cars.

Accident No. 3.—Peter McCue, Irish, helper, aged fourteen years, was killed by a runaway car on an inside plane at Eckley, No. 2, on the 2d day of January.

Deceased was a helper to a driver who was taking the coal from the top of an inside slope to the bottom of this plane, when it was hoisted to the apex, and lowered down the other side. While a car was being hoisted, the rope broke, letting the car dash down the grade of about forty-six degrees, striking deceased and killing him instantly.

James Long, the inside foreman, testified that a few minutes prior to the

accident, he had met deceased and driver going in with an empty trip. He (Long) then went back to the foot of the plane, and had been there but a short time, when he heard a noise up the plane. He called "get out of the way:" after this warning he saw deceased coming toward him, and he was then struck.

If the proper examination of the rope had been made as our present law demands, this accident would not have occurred.

The rope was an old one and full of defects, and really unfit for use. Yet the verdict of the coroner's jury was, "that Peter McCue came to his death by being away from his work."

ACCIDENT No. 8.—Michael Kochman, Hungarian, laborer, aged twenty-three years, was fatally injured by railroad cars at Eckley, No. 5, breaker, on the 16th day of January.

Deceased was one of the loaders at this breaker. His partner having gone for empty cars, deceased saw them coming, and attempted to jump on, but failed, stumbled, and was caught between the cars and lump coal platform.

This is one of the accidents concerning which no person is guilty of any neglect except the sufferer himself, who has paid the penalty with his life.

ACCIDENT No. 14.—August Mosenti, Austrian, laborer, aged about twenty-nine years, was fatally injured by falling out of a car, while being hoisted out of a slope at Gowen, on the 4th day of March. He died the following day at the Drifton hospital.

This is a peculiar accident, and could not have been guarded against by any party but the victim. He was alone in the car, and if he had taken care of himself would have been landed safely on the top. The bottom man testified that he must have fallen when the car was about half-way up, and rolled to the bottom of the slope.

ACCIDENT No. 2.—Joseph Samuels, American, helper, aged thirteen years, was fatally injured by falling under an empty mine car at Harleigh, on the 11th day of April, and died in about five hours.

Deceased was a helper to a driver named Cooney, and was instructed by the foreman to ride on the rear end of the last car, as the cars are sometimes uncoupled on account of the uneven grade.

This time he was riding inside of the last car. The driver dropped his whip, and called on Samuels to pick it up, thinking the boy was riding on the bumper. The boy, instead of getting off the car at the rear end, went over the side in a place where there are no more than eighteen inches of space between rail and rib, while on the other side there are four feet. The boy somehow slipped and fell, and the wheels of the car went over him.

There was no excuse whatever for this boy to lose his life in this place, as the gangway was wide and high, and no refuse whatever on the sides.

ACCIDENT No. 21.—Harry Price, American, helper, aged eighteen years, was fatally injured by mine cars at No. 2, Stockton, on the 17th day of April.

This young man was helping his brother, who was driving a team. As was his custom, he rode in on an empty trip, the driver stopping at the first breast so that the helper could uncouple the last car. While getting out of the car, the mules for some reason started suddenly, and deceased was caught between the top rail and a collar which was lower than the others. The cars at this slope are five feet high from the rail, and this collar was only five feet six inches from rail, and through this space of six inches deceased was pulled. Justice prompts me to say that generally there is sufficient height in this gangway, but the nature of the coal causes the timbers to sink, so the gangway is continually being re-timbered. Yet after all the effort, there are numbers of collars less than six feet from rail.

Accident No 24.—Stephen Patch, English, driver, about sixteen years of age, was found dead on the track in the west gangway of Mt. Pleasant, No. 1, on the 19th day of June.

Deceased was driving on the night shift, and while taking a trip of cars toward the foot of the slope he must have fallen, the cars going over his body. How he came to get under the cars is unknown.

Where deceased got under the cars can be easily seen by the mark of his body on the gangway road. I failed to discover anything wrong with the gangway, as it was of good width and free from obstructions.

Accident No. 42. — Joseph Brusky, Hungarian, driver, aged nineteen years, was fatally injured by mine cars, at Yorktown, No. 6, stripping, on the 29th day of December, and died the following night.

Deceased was engaged driving empty cars from the main road into the several roads in the stripping. The empty cars were taken to these several stations by a locomotive The day of the accident, the locomotive was longer than usual in making the trip. The foreman, Thomas Davis, went down to the main gangway to see what was causing the delay. Before going, however, he ordered the runners not to run down the loaded cars until the locomotive came, when he would notify them to run the cars down. In a little while deceased came, and told the runner that they should run down the loaded cars. They answered by telling him what the foreman had ordered. He answered that everything was all right, and that they should run the cars down. He then went toward the main gangway; he had just reached that point, when the locomotive with empty cars was coming in. That instant the loaded cars came down the grade, crushing into the empty cars behind the locomotive with said sad result.

Foreman Davis and the party on the locomotive had a very narrow escape. Why deceased should have ordered the runners to run down the cars could not be ascertained.

Premature Blasts.

Accident No. 27.—Barthol Salazer, Austrian, miner, aged twenty-eight years, was fatally injured, at Derringer, by a premature blast, and died on the same day at the Drifton hospital. Deceased had prepared a blast,

lighted the match, and retired to a place of safety. He waited about ten minutes, if the testimony given by an eye-witness is correct, for the blast to explode; finding it wouldn't explode, he thought that the match had extinguished, and went back to relight it; when within a few yards of the hole the blast exploded with said result.

ACCIDENT No. 37.—Michael Lludner, Hungarian, miner, aged twenty-eight years, was fatally injured by a premature blast, at Eckley, No. 5, on the 16th day of October, and died on the 21st of the same month.

Deceased had drilled a hole, made a cartridge, and endeavored to push it into the hole. For one of two reasons—the hole not being round or the cartridge too large—it became fastened in the hole. Deceased took the butt end of his drill to drive it in, and while thus driving, the powder ignited with terrific force, hurling Lludner against an adjoining pillar, mangling him terribly.

This was an accident where the victim paid the extreme penalty for his rashness. Ramming a tight cartridge into a hole is a plain violation of the mine law. Every man caught doing this rash act should be discharged at once, as he is not only risking his own life, but those of others. Happily, in this instance, no person was injured except the violator of the law.

ACCIDENT No. 40.—James O'Donnel, Irish, miner, aged thirty-six years, was instantly killed by a premature blast, at Drifton, No. 1, on the 11th day of December.

This man was working a breast in very thin coal. He was considered a good and intelligent workman. Deceased had partly drilled a hole and ordered his Hungarian laborer to finish it while he would go and make a cartridge. The hole was finished, the miner brought back the cartridge and put it in the hole, where it got fastened so that he could neither pull it out, without breaking the cartridge, or push it in. While in this dilemma he thought of the fatal drill, took hold of it to push the cartridge in, and while thus striking the cartridge with the butt end of his drill, the powder exploded with said sad result.

Miners should never push in a tight cartridge, as it is very easy at first to take the cartridge out; then they should use the butt end of the drill to make the hole round. If that is not sufficient, they should make a smaller cartridge. The ramming of a tight cartridge is the most risky and reckless act a miner can ever be guilty of.

The laborer here was slightly injured. The evidence in the case was gotten from him, as he was the only eye-witness of the disaster.

Explosion of Carbureted Hydrogen Gas.

ACCIDENT No. 29.—Thomas Denneny, Irish, miner, aged thirty-eight years, was fatally burned by an explosion of gas, at Eckley, No. 5, on the morning of the 19th day of August, and died the following morning.

There were two breasts being opened at this place, one by William Aubrey, and the other by Denneny and brother. Aubrey's breast was up from the gangway a distance of about thirty-three feet, and deceased's breast was up only about twenty-eight feet from the gangway. They were opened about ten feet wide at the gangway, and widened to about thirty feet, at a distance of about thirty feet from it. The coal at this point was greatly confused, overlapping, and making double thickness. The miners, therefore, had to make their own pitch for the coal to run until they reached a point where the coal was regular. It was a very desirable place to work, as a few shots during a day were all that were necessary.

I passed this place on the 11th day of this same month, about the time Denneny and Aubrey were just starting; saw no trace of any gas, and found plenty of air in the gangway, which was to be turned up as soon as the first cross-cut was driven.

The day of the accident, deceased and brother went to work as usual, without thinking of the danger that was lurking in their working-place. Deceased started first, his brother following him about ten feet behind. When within about twelve or fourteen feet from the face, deceased's lamp came in contact with the gas, when a terrible explosion took place, burning deceased fatally and his brother seriously.

I made an examination of the place and found about fourteen feet of gas in the breast. I ordered the men in the vicinity away and the gas removed that night or before any of the men were allowed to work near that breast.

I questioned the foreman closely about the accident. He said that he had no fire-boss, having dispensed with him several months before the accident took place, as the fire boss he had, had not found any gas in the mine for several months. He also said that he never dreamt of finding gas at this place, as Denneny was only a few yards from the gangway; but if he had anticipated any gas, that he would have turned the air up to the face. He said that he was with Denneny and Aubrey the day before the accident, questioned them about the ventilation, both answering that they had good air. Yet he ordered Aubrey to drive a cross-cut at a point thirty feet from gangway, so that it would come out about the face of Denneny's breast.

Some time in October, 1884, I was at this mine and within fifty yards of the place where Denneny was burned, where I found gas for the first time in Eckley. I informed the foreman that the law required a daily examination of these places before the men were allowed to go to work. He promised to employ a fire-boss for that purpose. The man he then employed was the man he suspended a few months prior to the accident. I called an inquest, and the verdict of the jury was that Thomas Denneny came to his death through the gross neglect of Peter Pitt, the mine foreman.

Fatal Accidents from Falling into Slope and Breast.

ACCIDENT No 11.—John McTaggart, Scotch, mine-foreman, was instantly killed by falling into No. 8 slope at Jeansville, on the 16th day of February. McTaggart, with four other men, was engaged in laying rails on said slope, which has an average pitch of about 40°. Deceased and Superintendent MacFarlane decided that the safest way to do this work was to commence at the top of the slope, changing the rails as they advanced. The work was done successfully for about one hundred and thirty feet. The morning of the accident they were taking up one of the old rails, when the sills slipped from under them, carrying all the men down about sixteen feet, when they all grappled something and caught themselves, except McTaggart, who rolled to the bottom, a distance of one hundred and thirty yards. I called the superintendent's attention to the unsafe way they had been working. He explained that they commenced on top as it was considered safer, because the water that was continually trickling down the slope would loosen small pieces of coal and slate, which would roll down, injuring the men at work. In my view the argument was not worthy of attention, but I replied that the only safe way was to commence at the bottom, which is the universal custom at other collieries. I instructed the superintendent that if he insisted on continuing in the way they had been working, that a battery should be kept constantly at a distance of not more than thirty feet from the place the men would be working, or even nearer than that if the length of rails would permit. I am sorry to say that McTaggart lost his life through an error in judgment on the part of himself and superintendent.

ACCIDENT No. 28.—George Ferko, Austrian, roadman, aged twenty-one years, was killed by falling down a traveling-way at Drifton, No. 2, on the 1st day of August. Ferko, with several other men, was going to work on the night shift, deceased leading down the man-way, which is one of the best man-ways in the coal fields. For some reason, when nearing the first lift, he stepped over the railing, and into the slope, when he fell down about one hundred and fifty yards. Why deceased stepped into the slope, I was unable to find out, as certainly there was no reason for it.

ACCIDENT No. 30.—Evan Owens, Welsh, miner, sixty-two years of age, was drowned by falling into an old breast at Tresckow, No. 9, Lehigh and Wilkes-Barre Coal Company on the 13th day of August. Evan Owens and son were driving what is called a counter-gangway across the faces of old chambers which were driven up from Slope No. 2. No. 2 had been worked out and abandoned about nine years previous, and allowed to fill with water to a point near where the counter was crossing. The chambers from No. 2 were driven about seven yards wide, as the roof was very poor. Where the accident happened, the pitch of the seam was about 45°. To cross these old breasts, a row of strong props was put below the level of the gangway, and lagged closely to hold the coal from going to the

water below. When a breast would be crossed, long stringers were put in from pillar to pillar, on the top of which sills and rails were put in place, so the next pillar could be pierced to the next breast, when the same operation would be performed. The night before the accident, young Owen put a shot in the top slate, which loosened three of the props they had put in; nevertheless, he went home without knowing anything was wrong. The next morning, deceased and laborer went to work. Being a good miner, he saw at once that the props were loosened. He ordered the laborer to load the loose coal, while he would go to the surface for new props, as those in place were now too short, and could not be fastened. After deceased had gone out, the mine-foreman, Owen Evans, came in. He also found that the props were very unsafe, and at once asked for the miner. The laborer informed him that he had gone for props. The foreman went out after him, and found him cutting props. The foreman tried to impress upon him the danger there would be in changing the props, and told him to be very careful in going down with the rope. Owens answered that he would make the place safe. The timbers were sent down, and deceased and son went down. After reaching the face of the gangway, they found that the coal car had not been taken out. In a few minutes the driver and the mule came for the car; deceased, son, and laborer went inside between the car and the face and stood on the loose props, which dropped from under their feet, precipitating the three into the water below. The driver at once gave an alarm, and in a few minutes the driver-boss came and rescued young Owens and the laborer. The deceased, as far as it is known, did not come to the surface. An effort was made to grapple for the body, but the condition of the roof where the props fell was such as to make it unsafe for the men grappling. After examining the place and its surroundings, I ordered the foreman to have the place made secure by timbering as far down as the water, which was about eighteen feet below, then erect a swimming platform on the water, and from that to grapple for the body. Grappling was kept up at intervals for several days, but the body could not be found.

After a consultation with the resident engineer of the company, we agreed that the only way to find the body was to have the water pumped out of the old workings below. To do this work successfully, it was necessary to erect an engine at the old No. 2 slope to lower the pumps down to the water, which was at this point about three hundred feet from the surface.

Two 12″ Cameron pumps were lowered and put in place. With these pumps the water was lowered about fifteen feet vertically. While the water was being lowered, the breast which deceased fell into was made secure, and grappling irons about seventy feet long were used, but without avail.

When everything looked favorable toward rescuing the body as soon as

the water was lowered, a squeeze was observed along the gangway and near the place where deceased fell, which continued slowly until the gangway closed for about ten chambers, the whole basin settling on the surface from the north to the south dip, extending east and west on the surface for several hundred yards. Why the basin caved in at this time, while no mining was carried on inside, remains a mystery, which cannot be solved but in one way, *i. e.*, that the pressure of water before starting to pump was just enough, with the few pillars left in the basin gangways, to hold the surface up.

The displacement of water was equal to about nine hundred and thirty-seven pounds for every square foot, which, if multiplied by thousands of square feet, would be equal to the strength of a large number of pillars.

The company did not make any further effort to recover the body, having satisfied the widow by paying her certain monthly installments. I consider that this company made a reasonable effort to recover the body of Owens. I called a large number of witnesses together, but after a rigid inquiry, failed to find that this accident could have been prevented by any person but the deceased himself.

The testimony of the main witnesses is as follows:

Owen R. Evans testified: I am inside foreman for the L. & W. C. Co., at Tresckow, No. 9. I am fifty-four years of age. Have been inside foreman for twenty-five years. Have been in Tresckow since 1868. Had charge of No. 9 when Evan Owens was killed. Have full charge inside of the mines. Mr. Hollenback is the resident engineer, and I often consult with him; consulted with him about the way I intended to open the north-west counter-gangway where Owens was killed. Took my own way to cross the faces of the chambers that came from No. 2. Evan Owens, Sr., and Evan Owens, Jr., and two laborers were driving the gangway when they broke into the last breast. Instructed Owens, Sr., how to timber—told him to put props on the lower side, lag or plank them closely, then fill up the place with refuse—or coal if he had no refuse—until he had pierced the next pillar, when the company men or himself would put in long stringers. They put in five props Tuesday and Wednesday. I was in the place Wednesday afternoon. The old man Owens told me that everything was all right. I could examine the place, as it was lagged and filled up. Took the old gentleman's word for the condition of the props. Owens, Jr., worked on the night shift. Gave no instructions about blasting the lower side, as it was their duty to make place for the timbers. The company paid so much per yard for gangway, so much per yard for rock and slate, and so much for timbering. I did not instruct them how to blast rock or slate. Owens, Sr., was a good workman, one of the best I had. Gave him the gangway because he was a good, careful miner, and also an old friend. Never heard Mr. Owens say that he was afraid to cross the breasts. He never suggested any other way to do the work. We disagreed about the standing of props; he pre

ferred to put a cap piece on the props, and I preferred a niche in the top I let him have his own way. I considered this a safe way of crossing the chambers. Have driven counter gangways in such places before, and never had any trouble. I think the blasting of the slate that afternoon loosened the props. Went into that gangway every morning, and sometimes twice a day. Owens knew that they had to put stringers there. Went there the day of the accident between seven and eight o'clock, saw that the top slate was blasted down, and the laborer loading a car with coal. I told him that the place did not look safe. I advised him to knock a loose piece of coal down near the face, to make room for stringers. He said by doing that he would knock the whole thing down. I then examined the place, and asked him for the old man. He informed me that he had gone out for his son to help him fix up the place. I asked the laborer to come away, as the place was not safe; he said he would as soon as he finished loading the car. I then went outside to look for Owens, Sr. I found him cutting props with his son. I informed him that his place was very unsafe, and asked why he had not put in the stringers. He said that he had no room yet. I said that he should know the danger, and that if he fell into the water that he could never get out. He said that he would fix the place safe before he would come out, and I never saw him after that. As a miner of thirty-five years' experience, I think the danger is the same in crossing a breast 45° or 50° whether full of water or empty.

I found fault with Owens previous to this for putting in temporary road before the stringers were put in. Told him Tuesday or Wednesday, the latter I think, that the road must be taken up so as to put stringers in. I did not order him to take it up then as I had no idea of the danger, as I thought the props were all right.

Patrick Gallagher testified: I am thirty-eight years of age. I am a driver boss and an assistant boss, at Tresckow, No. 9. I made a practice of going into the north-west gangway several times every day. I was there the afternoon before the accident. I did not give Owens any instructions, as I saw nothing wrong there. I was in Thursday morning before the accident to see if there was a loaded car there, but did not notice that any slate had been blasted the night previous. I had no fear of crossing these chambers. Evan Owens did not want the stringers put in, as he considered it safe enough with the row of props on the lower side. He often told me that. Never heard him have any words with the mine foreman about that matter. Never heard anybody saying it was dangerous to drive this gangway that way. Have worked in the mines from boyhood. I think the danger is about the same in crossing a breast, whether it is full of water or empty, on this pitch. Don't remember of anybody present when the old man Owens made the remarks to me about the stringers. That conversation passed between us when he was crossing the second breast.

Evan Owens, Jr., testified: I am a son of the deceased. Am a miner by profession. Have worked in the mines about seventeen years. Am about twenty-six years of age. I was driving the north-west gangway with my father. I was on the night shift, and my father on the day shift. I had worked in this gangway since the start. I did not anticipate any danger in crossing the first chamber. Did not think crossing the others safe work. My father and I talked over the matter, and thought our way of working unsafe. It was our work to put in stringers as soon as we had room for them. The mine foreman told us to put stringers in the last breast, but not until we got the coal down. My father and I stood three props on Tuesday and two on Wednesday. Wednesday night I blasted down the slate to make room for the double timbers; the slate was thrown down the breast. The blasts did not loosen the props, as far as I saw. I put the road in—the foreman told me he wanted the road in before we put in the stringers. I said that we would have to take the road up again. The place was safe when I went home Wednesday night. Father called me out of bed Thursday morning, saying that one of the props had fallen, and two other props were unsafe. We cut three new props. The mine foreman came to us and told father that he must secure that place, as it was very unsafe—he did not say how. Father said that we would put in three new props, and make the place safe. We took the props in, and found that one prop had fallen, and that two others were in an unsafe condition. When we reached the face of the gangway, we found a loaded car there, and standing partly on the unsafe props. I don't know whose fault it was that the car was pushed in on the unsafe props. Soon after our arrival the driver came for the car; we moved inside of the car to give the driver room, and stood on the unsafe timber to push the car to start it; while doing this, the props fell from under us, precipitating the three of us into the water below. The laborer and myself were fished out, but I never saw father again. I don't know whether he came to the surface of the water or not. We made a practice of helping the driver to start the car; we were not instructed by anybody to do so. We did not think that the props would fall from under us, but knew they were not very safe. I never told the mine foreman that our way of working was dangerous; I only spoke in that way to father.

Thomas P. Davis testified: I am twenty-four years of age. I am a laborer. Have worked in the mines for fourteen years. Worked in this gangway for four months. I have mined coal, have worked two breasts, but am laboring now; had no experience before in driving gangways. My stepfather, Owens, thought it was safe, or he would not have allowed me to work there. Did not hear Owen Evans tell how to secure the last breast. Don't remember Owen Evans having been there on Wednesday afternoon. He came there every day. We put the timbers in the last breast Tuesday and Wednesday; they were put in safely. Went in on the day of the ac-

cident at seven o'clock: Mr. Owens went in with me. I noticed that there was a prop out. Mr. Owens examined the place, and saw that one prop was out. He went out after a car was brought in. The car stood about six feet from the face. We shoved the car in where we wanted it. He told me to load the car. The mine foreman came in. He looked at the place and said it should be made more secure. He did not tell me not to work there. I told him my step-father had gone for props. I had loaded the car by the time my step-father and Evan Owens, his son, came in. They unloaded the props behind the car. We were talking of the best way to put the props in, when the place went down from under us. We stood between the car and the face. When the driver came in for the loaded car I was not afraid then. The others showed no fear. Did not suppose the props would fall so soon. Heard Owen Evans speak of putting stringers in, but the gangway was not extended far enough for that. I think blasting the top rock injured the props. Had I examined the props, think I would have seen they were not safe.

This is only a part of the evidence taken, but sufficient to explain the reason for the accident. I publish this evidence, and can certify that it is correct, so the public may see all the particulars in this sad case.

Boiler Explosions.

Accident No. 13.—George Krapf, German, fireman, was fatally injured by the explosion of a boiler at Coleraine, No. 1, on the 4th day of March, and died on the morning of the 5th. Deceased was the day fireman during that week at No. 1, where he had been employed at the same work for about seven years. He was considered a good fireman, who paid great attention to the boilers. For some reason, about 10.30 A. M., on that day, when everything was moving smoothly, without any warning whatever, one of the boilers exploded with terrific force, throwing one half of the boiler about two hundred yards southward, while the other part was thrown northward a long distance, crushing through the boiler-house and into a stable, killing a valuable horse. The force of the explosion scattered the walls in all directions, part of which struck deceased with fatal effect.

The boiler was thirty feet long and thirty-four inches in diameter. The thickness of the plate, where it tore apart, was one fourth of an inch, which was the original thickness of the plates. The boiler parted in the fifth sheet, and about twenty two inches from the rivets. In my examination I failed to see anything wrong with the iron, or that the water had been too low, but found a scale of about one sixteenth of an inch on the bottom of the boiler. This scale should not have been allowed to be there. If they were examined as they were reported to me, the examiner neglected his duty, as all these scales should be carefully removed. The evidence in the inquest was very conflicting. I have attached the evidence of the most important witnesses:

JOSEPH GATES, *sworn:*

My name is Joseph Gates; I am forty-four years old; I reside in Beaver Meadow; I am rated as an engineer; my business is to look after the pumps, boilers, and machinery of W. T. Carter & Co., at the Coleraine collieries. It is part of my duties to examine the boilers twice each year, and oftener, if found necessary. I examined the boilers at No. 1 during the latter part of 1885, say from some time in November until the end of the year. I can't say on what date I examined that set of two boilers, one of which exploded on the night of March 3, this year. I make an inspection of boilers and file my report, under oath, with the mine inspector for this district. The mode of inspection that I have followed is to examine the boilers underneath. I brush them off, and if I can see or find anything wrong, have them repaired. Then I go inside with a hammer and sound the boiler. I inspect the boiler for the whole length. I generally do this when we get an opportunity to do so, so as not to interfere with the running of the colliery. I use an ordinary force with the hammer to sound the boilers. I am positive that when I examined those two boilers during the time stated that there was no crack in them, or sign of any burn. I did not examine the top of the boilers on the outside, but I did inside. I considered those two boilers safe. The water-line was above and below the center of the boiler. I did not see any scale in the boilers on the bottom of them. I noticed none that would hurt them. There might be some little scale that I did not knock off. We feed the boilers with spring water. If there is a scale on those two boilers, or any of them now, I can't account for it. Just after inspecting those boilers, I tested the steam-gauge and found that the escape valve blew off steam when the gauge showed sixty to sixty-five pounds. I found that, when the gauge showed sixty to sixty-five pounds, the lever on the escape valves showed ninety pounds. Those two boilers were put in in 1879. I don't know what quality of iron they were, but I heard the boiler-maker, Isaac Sands, say that the iron was No. 4 iron, that measures one fourth of one inch in thickness. They were thirty feet long, and the diameter thirty-four inches. I consider the iron as good. I don't know what quality of iron they were bought for. I have looked at the boiler since the explosion, and I think it is as good as No. 1 iron, unless No. 1 iron is better than I think it is. I do not think, by the looks of the iron, that they have been overheated. About one week after the explosion, I found the feed valve of those two boilers, and it was open. It would not open by the shock of the explosion. The grease, or oil, found on the valves of the hoisting and donkey engines, or part of it, is likely to get into the boilers through or by the exhaust into the heater.

Frederick Zullick, *sworn:*

I reside in Hazleton, Luzerne county; I am thirty-five years of age; I am a boiler maker by trade; I have followed boiler-making since 1870; I am not officially, or otherwise, a boiler-inspector; I did not see those boilers before to-day, when I examined them carefully. I could not tell of or detect an old crack on any of them, on account of the explosion. I think my experience will enable me to judge of the quality of iron. The boiler which exploded, I think, is not No. 1 iron. I have seen boilers, but not many, made of the same iron. I found the water-line about near the center. I found a scale on the exploded boiler about from one sixteenth to one eighth of an inch thick, on the bottom of the boiler. The effect of this scale would be to require more fire or heat to produce the same amount of steam. I found the scale to cover the bottom of the boiler for about one sixth of the circumference. I did not find the boiler burned. I think if used fairly the boiler would carry sixty pounds of steam with safety. I think the iron now is as good as when put in. I don't think the scale had a tendency to the explosion of the boiler. I can assign no theory or reason for the explosion. I think a scale like this has a tendency to damage the iron of a boiler: the water can't get to the iron and it is liable to burn. It would not be safe to carry ninety pounds of steam, by any measurement that I know of, in those boilers.

George Kay, *sworn:*

I reside at Coleraine. I am employed as fireman at No. 1 colliery, where the boiler exploded on the night of the 3d instant. I have fired there since the 6th of May. I fired fourteen years in England and this country before I came here. I had more water that day than I had for three weeks before. The water never went below the first gauge that I know of; it sometimes dropped below the third gauge. I was there on the day-shift one day last year, before the end, when Mr. Gates went under those two boilers—the boilers were blown out the night before. It was in the afternoon I saw him go under the boilers. I saw him go back the length of the boilers. I stopped at the fire-door until he came out. He was not there alone. He did not go into the boilers. He did not go on top of them. We have not been afraid of the boilers since the two boilers were taken out some time ago. The bridge and side walls of the boilers were poor at that time—the day when Mr. Gates examined them; they were the last set that Mr. Gates examined. That was the last time Mr. Gates examined those boilers. I was there with him all the time during that examination, and he did not go into any of the boilers. He had nothing with him when he went under but a lamp. He did not sound the boilers: he could not sound or take anything with him to sound the boilers without me knowing it; I was looking at him all the time during that examination. He might have been under the boilers at that time from twenty to thirty minutes. I was looking in

at him until he came out. He was looking and examining the boilers while under. The man-head of that set of boilers was not removed on that occasion. I fired those boilers up about four o'clock that afternoon. It was about nine o'clock the night before when the fires were taken out from under those two boilers. I always found Mr. Krapf to be a good, sober, and attentive fireman. I think Mr. Gates is a good and capable man to inspect boilers. I had enough water in those boilers when I left that evening, and he had enough time to keep it up until the explosion took place; there was no scarcity of water. I found the mate to the exploded boiler about one third full, the next day, when the boiler fell from where it was thrown by the explosion.

VERDICT.

Inquisition on dead body of George Krapf.

The undersigned jurors, inquiring into the death of George Krapf, after having viewed the body and hearing the statements and evidence of all the witnesses, find that said George Krapf came to his death from injuries received by the explosion of a boiler at Coleraine colliery, No. 1, on the night of March 3, 1885, the cause of the explosion not known to the jury, and also find that the exploded boiler had not been properly inspected according to law.

NEIL PAUL,	STEPHEN E. FARROW,
NEIL MCBRIDE,	CONDY BOYLE,
H. H. MCBRIDE,	S. P. SMITH,

Jurors.

March 4, 1885.

I certify the foregoing to be a true and correct copy of verdict of jury in above inquisition.

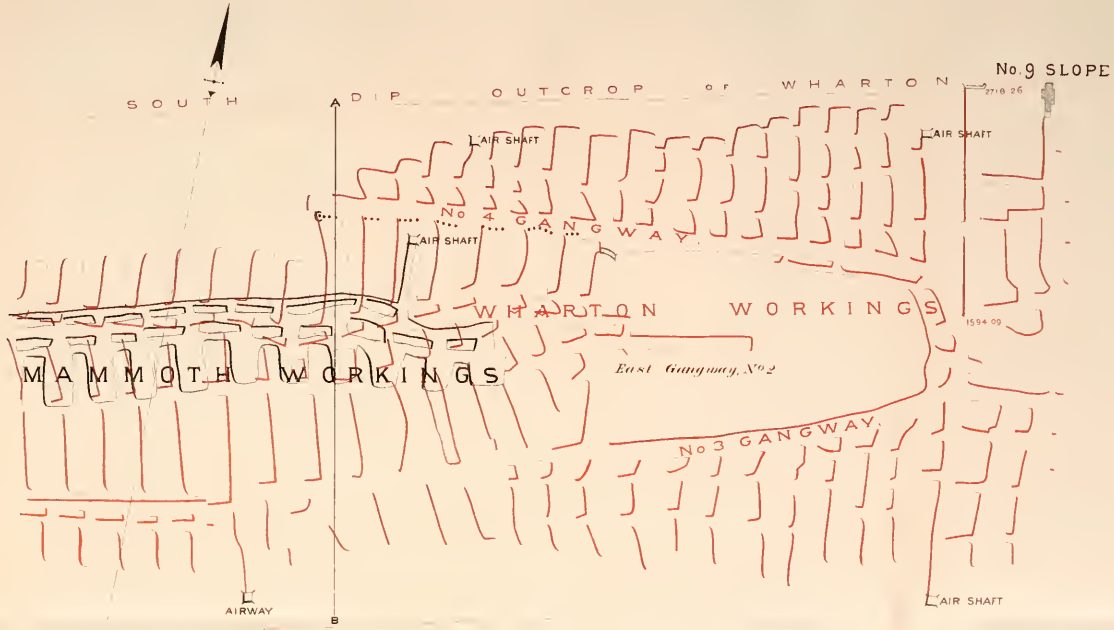
H. MCGARVEY, J. P.,
Acting Coroner.

ACCIDENT No. 18.—Edward McGettigan and James Boyle, Irish, firemen, were killed by a boiler explosion at Yorktown, No. 5, on the 10th day of April.

This was a bad accident, as a great deal of neglect and carelessness were found to exist among the firemen. There were four of them at this place, two on the day shift, and two at night. The men on either shift did not seem to care about anything but to keep enough steam for their respective shifts, caring very little about the boiler or about their own safety. The foreman should have made an effort to find out the reason for this bad feeling existing among the men, and taken prompt measures to remedy it.

The boiler that exploded was thirty feet in length, thirty-four inches in diameter, and originally made of five-sixteenths iron. The boiler was re-

SECTION on LINE AB.



Reference

C. Breast where Evan Owens Fell

Line of Water

... Showing Props in Each Breast

Dam to keep Water from No 9

PARTS of Nos 2 & 9 WORKINGS.

TRESCKOW.

100 Feet to 1 Inch.

ing existing among the men, and taken prompt measures to remed

The boiler that exploded was thirty feet in length, thirty-four inches in diameter, and originally made of five-sixteenths iron. The boiler was re-

ported examined in January, but I have great doubt of the truthfulness of this report.

If any competent man had examined this boiler, he could not have failed to see the grooves which the acid-water had made in the sheets. I measured the thickness of the sheet that had parted, and found it varying from three sixteenths to five sixteenths of an inch in thickness. Any practical eye could, and should, have detected these grooves if the boiler was cleaned and properly examined.

The conclusion I came to was, that if the boiler was examined, the man who made the examination was utterly incompetent, and that he perjured himself by swearing that he was competent.

I notified the superintendent that all the boilers in No. 6 should be examined by some competent person, as I had no faith in the word or oath of a man that would swear that such a boiler was safe. The boilers were reëxamined by a boiler-maker, who gave them all a general overhauling and reported them safe.

An inquest was held, and the testimony of the main witnesses is here attached, which is very conflicting.

The Commonwealth of Pennsylvania, } ss:
Carbon County, }

In the matter of the inquisition on the dead body of Edward McGettigan, killed by the explosion of a boiler at No. 5 colliery, Yorktown, in said county, and held on the 11th, 18th, and 20th days of April.

Evidence.

Howell Green, *sworn:*

I am fifty-four years of age. My business is superintendent of the Jeansville Iron Works. Am a mechanical engineer by profession, and think I am capable of judging of the quality of iron, and its fitness for certain purposes. I have seen the exploded boiler, and would say that originally the iron was very good. I would consider that from use, being heated and cooled, the iron has materially deteriorated. I measured the thinnest part of the iron, and it is three sixteenths of an inch in thickness. It seems to have been originally five sixteenths of an inch in thickness; one eighth of it is gone. I think a pressure of sixty pounds of steam would be as much as I would recommend for such. My theory of this is, that from some cause the boiler first cracked on the bottom, then extended around the boiler, and by the consequent rush of steam thereto from the other boilers, it parted, each end taking its own direction.

(Signed,) Howell Green.

John S. Boyer, *sworn:*

Am twenty-nine years of age; reside at Yorktown, and have for three years. I have been outside boss at No. 5, Yorktown colliery, between two and three years. It is part of my duty to examine and inspect the boilers

there at least once every six months, and oftener if required. I last examined them between the 12th and 18th of January. Sometimes I examined two, and sometimes four of them at a time. I took a memoranda of my inspection as I proceeded with it, and when I had the whole inspected, I filled out my report. I qualified to my last report before J. A. Smith, justice of the peace, at Audenried.

My mode of inspection has been to sound with a hammer inside and outside, inspect the seams, and then act according to my judgment as to the quality and thickness of the iron. I did it in this way the last time in January. The side and bridge walls were in good order at that time. The boilers were fed by the injector process, which heated the water. I examined the boiler that burst in January. I pronounced it all right. I inspected the seams throughout. I found no parting or space between the iron of the boiler at that time. There is none now that I am aware of. I have examined the parts since, and found no evidence that would lead even to a suspicion that there was a flaw, crack, break, or fracture in any part of the boiler, or that might have been before the explosion. The thinnest part is three sixteenths of an inch. There were two front sheets put on the boiler about one year ago. The fires under the boiler, when intended for inspection, were taken out at night and the steam blown off, and then I examined them the next day.

It usually took me about fifteen or twenty minutes to examine a boiler —I found it pretty warm work while at it. During working hours we carry sixty pounds of steam—our safety valves blow off at that pressure—we don't carry that pressure at night. Since the explosion, I have reason to suspect that the firemen have or had neglected their duty, but my suspicion is based on hearsay. We worked until seven o'clock on the evening that the boiler exploded. The boiler exploded about half past eight o'clock the same evening. Pure fresh spring water was used in the boilers. Edward McGettigan and James Boyle were on the shift that night as firemen; McGettigan was killed outright by the explosion, and Boyle has since died from the injuries he thereby received. McGettigan was a sober, capable, and intelligent workman; he had worked there as fireman for one year or more. Boyle was considered about the best fireman we had in Yorktown; I always found him right. My theory of the accident is that, at some time since I examined the boiler last, the firemen or some of them allowed, by neglect of duty or some other reason, the boiler to become overheated and weakened, and then it cracked and parted.

(Signed,) JOHN S. BOYER.

HOWELL GREEN, *recalled:*

It looked to me that the crack around the boiler had started or begun at some period before the explosion. The iron appeared as if it had fretted, that is, the fatigue of the iron from heating and cooling and chemical action. An inspector examining in the boiler can hardly tell the tensile

strength of the iron; he ought to be able to tell pretty nearly how thick it was. An inspector would hardly condemn iron three sixteenths of an inch thick. I think a man could inspect a boiler in fifteen minutes, but I would like to have thirty minutes to do it in, and I would like to have the boiler cool and clean to do it in that time.

(Signed,) Howell Green.

John Kenvin, *sworn:*

I am forty-two years of age, an engineer by occupation. Employed at No. 5 colliery, Yorktown, for fifteen years. I think McGettigan was not long enough there to be an efficient fireman. I think Boyle was a good, capable man. Boyle was the oldest hand, and the understanding was, that McGettigan was subject to Boyle's instructions. I have interfered with the firemen when I saw them have the steam above the registered point, the doors shut, and the blower on; I checked Boyle about it. This happened on several occasions, and as late as within two months. On the evening that the explosion took place, Boyle came to me and said that he and McGettigan fell out, and that on the morning before that McGettigan had closed three doors which he (Boyle) had left open when the steam was blowing off, and then went down to the locomotive-house; and Boyle also said to me that McGettigan would blow the place up. Boyle also said at the time that if he had re-opened the doors, McGettigan would fly at him, that is, he would have quarreled with him. I told Boyle to watch him, and speak of it to the boss. I never knew of them to have the water below the bottom gauge, or heard of it. I did not consider McGettigan a safe man in the place. I depended on Boyle for my safety, although McGettigan shared the work with him. Boyle told me that he would not assume the responsibility on the night shift, because of McGettigan. I cleaned this boiler the last time it was examined, and saw nothing wrong with it. That boiler had been put in there new within seven years. It was got, I think, at Allentown.

his
John × Kenvin.
mark.

William Ward, *sworn:*

I am about twenty years of age, a fireman by occupation, at No. 5, Yorktown. Have been employed there nearly one year. I was on the day shift with Charles Gildea. Edward McGettigan and James Boyle were on the night shift. I quit work that day, Friday, April 10, 1885, at five o'clock. McGettigan was there when I left. The water was to the top gauge, and the fires all good. The breaker was to run until seven o'clock. I think now, the pressure might have been seventy pounds or a little over. We usually carried seventy-five, but I believe the steam gauge was light: Mr. Boyer told us so, that the gauge indicated more than we carried. I went to the slope mouth after the explosion and there met a party carrying

McGettigan home. He was dead. That was about fifteen or twenty minutes after the explosion. I went to see Boyle that night; he was scalded and injured by the accident. I think Boyer told us that the steam gauge was four or five pounds light. We carried from sixty to sixty-five pounds pressure at night, and sometimes more when the pump would stop unknown to us. Boyle was the leading fireman on his shift. I regard Charles Gildea as the leading man on my shift.

(Signed,) WILLIAM WARD.

CHARLES GILDEA, *sworn:*

Am thirty-five years of age. Have been employed as fireman at No. 5, Yorktown colliery, about two years. There was one set of boilers blown out and cleaned in the month of January; it was the third set from the door on the west side, neither of which was the boiler that exploded. There was only one set blown off that I know of. The rest of the boilers had previously been examined, probably two months before this set of which I speak. There were more blown off since. The set of boilers, one of which exploded, was examined in December, or at least blown off and cleaned for the purpose of inspection, and not since. The last inspection of boilers was begun in November some time, on the east side; it was the first set next to the engine-house which exploded; it was the first set examined. I am of the opinion that Boyle and McGettigan did not work in harmony as men working together ought to do. Boyle told me that morning that McGettigan had let two of his fires go low, and that he would not feed the boilers, and that he told McGettigan to fix his fires before he would feed them, and that McGettigan went and sat down on the coal and said that he would not be bossed by him or anybody else. I have seen Mr. Kenvin go into the last set which was blown out, but I have not seen Boyer go into any of them. I have heard that the boilers were examined. I have not seen Boyer go into any of them since November. I don't know what set I saw him go into then. He had a hammer with him. I have heard the hands on the other shift say that Boyer had examined the boilers in the day-time. I was the first man to go there after the explosion. I shut three valves on the injector, and found two others open: one on the set that blew up, and one on the set next to them. I found the fires full to the boilers, with the blowers on. I don't believe that the fire under the set that exploded had been pulled at all. It was not past the time when all the fires should have been attended to. I never was afraid of any of the boilers. I had pulled the fire under the next set when I went home, and I found it as I left it when I came back after the explosion. We had fixed one of the night shift fires, the one next to the exploded set, so as to enable the night shift to keep steam, the water being heavy and the breaker to work that night longer than usual. I am positive that the injector used there does and did, as a general thing, feed the water from warm to hot, and almost always hot.

(Signed,) CHARLES GILDEA.

David R. Hughes, *sworn:*

I am thirty-five years of age; a boiler maker by trade; worked at Jeanesville, where I have been employed as a journeyman for four years, and during that time a foreman. I saw the boiler at No. 5, Yorktown, the day after the explosion. I repaired that boiler two years ago last November. I put three new sheets, and about two patches on it. My theory for the explosion is that the boiler had been cracking by the action of the heat, cold, expansion, and contraction; a common thing in the coal region. The cracking takes place gradually. I think, with fair treatment, this boiler should have been safe with a pressure of seventy pounds. I would not consider it safe to operate with a boiler whose thickness was only three sixteenths of an inch, and carrying more than seventy pounds of steam. I have only measured the thickness of the top of the sheet that gave on the exploded boiler, and found it five sixteenths of an inch thick. It was a new sheet that gave. It was over the bridge wall, and by the action of the fire at that point, and the flow of the water to and fro in the boiler, would have the effect of weakening the groove near the bottom of the sheets more on the outside than on the inside sheet.

James E. Roderick, *sworn:*

I am forty-three years of age. Am mine inspector of this district. I examined the bursted boiler at No. 5, Yorktown, and found the thinnest part three sixteenths and the thickest part five sixteenths of one inch in thickness. I am now satisfied that there were only two new sheets put in, and that the old and new sheets were not fairly jointed, and allowed a space for the action of the acid water at the bottom of the sheets and between them. I am satisfied that the sheet that parted was an old one, as there was a great difference in the appearance and thickness of the sheets. I think that the boiler examiner should have detected the grooves, and had this boiler repaired.

Verdict.

We, the undersigned jurors inquiring into the cause of the death of Edward McGettigan, after due and diligent inquiry, and having heard all the sworn testimony, find that the said Edward McGettigan was killed by the explosion of a boiler at No. 5, Yorktown colliery, on the night of the 10th of April, 1885. And we further find that there existed before the explosion a flaw in the said boiler, which should have been detected had the boiler been carefully examined and inspected.

H. H. McBride, *Foreman*,
Frank McFadden,
Nelson T. Huthstein,
John B. Richards,
Fred. Call,
S. P. Smith,
Jurors.

April 20, 1885.

Hugh McGarvey, *J. P.*,
Acting Coroner.

Fatal Accidents by Machinery.

ACCIDENT No. 10.—Charles S. Falk, German, slate picker, was fatally injured by having his leg caught by the monkey rollers at Lansford, No. 4, breaker, on the 9th day of February. For some reason the breaker was stopped for a few minutes; during this time, deceased or some other boy had removed the cover from the rolls, for what reason I could not find out. When the breaker started again, an outcry was made that a boy was caught in the rolls. The breaker was stopped, the boy taken out, and removed to his home. In my investigation I found that the place was ordinarily safe, but very unsafe when the cover was removed. Whether the boy came to his death through his own acts or not, I failed to ascertain, as no boy would give any testimony, except that they saw Falk in the rolls.

ACCIDENT No. 41.—John Metzgo, Hungarian, oiler, aged twenty-one years, was killed by falling into breaker machinery while oiling, at Gowen, on the 16th day of December. This was a peculiar accident, as the place where deceased was caught was considered safe. The rules of this company are that no dangerous parts of the machinery shall be oiled while in motion. It is very hard to continually watch these people. John Metzgo was an intelligent Hungarian, and for that reason was detailed for this work, yet he lost his life while disobeying instructions given to him personally by the breaker-boss.

ACCIDENT No. 32.—Andrew Haas, German, breaker-engineer, aged forty-three years, was found dead near the main shaft at breaker No. 2, Oakdale, on the 5th day of September. Deceased was the regular oiler, and when he was through, he used to call out, "All right," and then the breaker would be started. This day, the screen-boss saw deceased oiling, a few minutes before seven, A. M., and heard him call out, "All right." The breaker was started as usual. Some time afterward, the screen-boss had his attention called to something near the screen, and, upon an examination, to his horror found deceased all doubled up about the shaft. The assistant superintendent and the breaker-boss swore that, since the new law came into effect, they had given strict orders that no parts of the machinery should be oiled while in motion. The verdict of the jury was that deceased came to his death by disobeying these orders.

Miscellaneous Fatal Accidents.

ACCIDENT No. 6.—John McGinley, Irish, miner, aged forty-four years, was killed by a rush of coal in his breast at Highland, No. 2, on the 12th day of January. Deceased had finished this breast some time previous, and a man named Maloney was loading the coal for him. Eventually the battery became empty, owing to the coal being blocked up in the breast. Saturday, prior to the accident, Maloney failed to load his trips, as he failed to start the coal. The afternoon of the same day he notified McGinley of the fact, who answered that he knew the place where it was blocked, and that he would go in with him early Monday morning and start the coal.

On that morning he went in with the laborer. He immediately went up the manway for about twenty yards, then broke a hole through the manway and entered the breast. In a very short time, the laborer, who was at the battery, heard a rush of coal coming down the breast, and was horrified to see McGinley carried past him amidst the coal into the chute below. The rush of coal filled the chute and battery.

Maloney immediately gave the alarm, and, as quickly as possible, opened up the chute board, letting the coal run into the gangway, and in a few minutes McGinley was drawn out dead.

After investigating the accident, I could see that McGinley must have been a good, practical workman, as the chute, battery, and manways showed the work of a master-hand. Yet how he came to make this reckless effort to start the coal I cannot say. If he had considered a little beforehand about what he intended doing, he would have seen in a moment that he could not escape the rushing coal after it had started, as the place was pitching about 50°.

Accident No. 7.—Thomas J. Williams, Welsh, miner, aged thirty-three years, was fatally injured by being struck by a falling prop, at Jeanesville, No. 7, on the 16th day of January, and died the following day.

Deceased and another miner were engaged opening a breast in the Wharton, which had an angle of about 55°. A temporary battery had been put in. This day they had taken in the main battery props; the car was stopped at their place, and while lifting a heavy prop on to a temporary platform, about four feet above the top of the car, deceased slipped and fell into the car, the prop balancing and falling on him. At first he was not considered seriously injured, as he was able to walk home, but soon afterward commenced to vomit blood and died as stated. This is another accident that could have been avoided if the men themselves had taken any precaution by putting planks on top of the car, instead of attempting to lift the prop by main strength.

Accident No. 17.—Frank Boyle, Irish, miner, aged about forty years, was fatally injured by falling into a chute, at Tomhicken, on the 3d day of April, and died in the hospital at Drifton. How deceased fell into the chute is not known, as he was alone at the time. It was a great surprise to all that he should have died, as he was considered only slightly injured, but he must have received internal injuries.

Accident No. 21.—Joseph Contuto, Hungarian, laborer, aged about twenty years, was fatally injured at the Ebervale stripping, on the 21st day of January, and died the next day, at the Drifton hospital. Deceased was employed as picker. While working at the face, the foreman, another Hungarian, called his attention to the fact that a crack could be seen in the bank, and that he should stop picking, go on the bank, and bar it down. He complied with the order, but could not throw the fall down, and consequently went to cut under it a little more; he had only given a few blows when the bank fell with the result as stated.

TABLE No. V.—*A list of accidents resulting in death, in the South district of for the year ending*

Number.	DATE.	Names of Persons Injured.	Occupation.	Age.	Widows.	Orphans.	Names of Collieries.
1	Jan. 5	Daniel Cambell, . .	Miner, ...	21	. .	}	Upper Lehigh, No. 5, ...
2	5	Peter Cambell, . .	Laborer, . . .	18	. .	}	
3	6	Dennis McGuire, .	Helper, ...	14	. . .		Council Ridge, No. 2, ...
4	6	Patrick Canahan, .	Miner, ...	75	. . .		Yorktown, No. 6, Stripping, ...
5	6	Michael Nask, . . .	Miner, ...	35	. . .		Laurel Hill, ...
6	13	John McGinley, . .	Miner, ...	44	1	7	Highland, No. 2, ...
7	16	Thos. J. Williams,.	Miner, ...	33	1	. .	Jeanesville, No. 7, ...
8	16	Michael Kochman,.	Laborer, . . .	23	. . .		Council Ridge, No. 2, ...
9	21	Joseph Contuto, . .	Laborer, . . .	21	. . .		Harleigh Stripping, ...
10	Feb. 9	Charles F. Falk, . .	Slate picker, .	11	. . .	.	Lansford, No. 4, ...
11	16	John McTaggart, .	Mine boss, . .	38	1	4	Jeanesville, No. 7, ...
12	16	Michael Dougherty,	Miner, ...	. .	. .	.	Yorktown, No. 6, ...
13	Mar. 4	George Krautz, . .	Fireman, . . .	. .	1	. .	Coleraine, No. 1, ...
14	4	August Mosenti, .	Laborer, . . .	. .	. .	.	Gowen, ...
15	17	Conrad Deisenroth,	Miner, ...	42	1	4	Hazleton, No. 6, ...
16	20	August Whitebread,	Miner, ...	34	1	3	Council Ridge, No. 5, ...
17	April 3	Frank Boyle, . . .	Miner, ...	35	1	4	Tomhicken, ...
18	10	. . . . .	Fireman, . . .	. .	. .	.	Yorktown, No. 5, ...
19	10	. . . . .	Fireman, . . .	. .	. .	.	Yorktown, No. 5, ...
20	11	Joseph Samuels, . .	Helper, ...	13	. . .	.	Harleigh, ...
21	16	Harry Price, ...	Helper, ...	18	. .	.	Stockton, No. 2, ...
22	17	Alex. Cambell, . .	Miner, ...	40	1	4	Harleigh, ...
23	May 23	Hugh L. Jones, . .	Laborer, . . .	27	. .	.	Upper Lehigh, No. 2, ...
24	June 4	Josiah Blackell, . .	Laborer, . . .	24	. . .	.	Stockton, No. 5, ...
25	9	Stephen Patch, . .	Driver, ...	17	. .	.	Mount Pleasant, ...
26	27	Jacob Ulshafer, . .	Miner, ...	53	1	4	Derringer, ...
27	July 28	Barthol Salazer, . .	Miner, ...	28	1	2	Derringer, ...
28	Aug. 1	George Ferko, . . .	Roadman, . .	21	. . .	.	Drifton, No. 2, ...
29	19	Thomas Denneny, .	Miner, ...	29	1	2	Eckley, No. 5, ...
30	13	Evan Owens, ...	Miner, ...	60	1	. .	Tresckow, No. 9, ...
31	27	Patrick McGlynn, .	Miner, ...	38	1	5	Ebervale, ...
32	Sept. 5	Andrew Haas, . . .	Engineer, . .	43	1	4	Oakdale, No. 2, ...
33	23	Anton Pertie, . . .	Miner, ...	22	1	. .	Beaver Meadow, ...
34	25	John McGrath, . .	Miner, ...	37	1	2	Mount Pleasant, ...
35	26	Samuel Curlin, . .	Miner, ...	48	1	5	Hazleton Mine, ...
36	Oct. 1	John Lannon, . . .	Laborer, . . .	24	. .	.	Lattimer, No. 3, ...
37	16	Michael Ludner, .	Miner, ...	28	1	1	Eckley, No. 5, ...
38	21	Michael Morachu, .	Laborer, . . .	30	1	2	Drifton, No. 2, ...
39	Nov. 24	James Metzgo, . .	Laborer, . . .	20	. .	.	No. 6 Stripping, Yorktown, ...
40	Dec. 11	James O'Donnel, .	Miner, ...	36	1	5	Drifton, No. 1, ...
41	16	John Metzgo, . . .	Oiler, ...	21	. .	.	Gowen, ...
42	29	Joseph Bruisko, . .	Driver, ...	19	. .	.	No. 6 Stripping, Yorktown, ...
					20	58	

NOTE.—Nationality by birth of persons killed and fatally injured as per table No. 5: Irish, 15; Hungarians, 8; Americans, 5; Welsh, 3; English, 3; Germans, 2; Austrians, 2; Italians, 2; Scotch, 1; Polanders, 1; total, 42.

Luzerne and Carbon counties, Pennsylvania, with remarks on the cause of each, December 31, 1885.

Remarks on the Causes of Accidents.	Explosion of CH4 gas.	Falling of roof and coal.	By mine cars.	Explosion of powder and blasts	Miscellaneous inside.	Machinery.	Miscellaneous outside.	Totals.	Number.
These two brothers were killed by the same fall of coal and clod near the face of their breast; it seems they went right back after a blast and were caught.		1						1	1
		1						1	2
Killed by a runaway car on the plane; the boy was caught while sitting near bottom,			1					1	3
Killed while drilling a hole, by fall of coal, caused by the thaw,		1						1	4
Killed by fall of clod in the Wharton; deceased and partner were robbing pillars,		1						1	5
Killed by a rush of coal inside of battery, where he had gone to start it,		1						1	6
Fatally injured by prop falling on him; died the next day,					1			1	7
Fatally injured by railroad cars at breaker; died in 6 hours,			1					1	8
Fatally injured by a fall of clay at stripping; died next day at Drifton hospital,							1	1	9
Fatally injured: fell into monkey rolls; died at his home in 8 hours,						1		1	10
Killed instantly by falling into said slope, a distance of 150 yards,					1			1	11
Fatally injured by a fall of coal; and died on the		1						1	12
Fatally injured by boiler explosion and died in 5 hours,							1	1	13
Fatally injured by falling out of car while being hoisted; died at Drifton hospital.			1					1	14
Killed by fall of coal in the Mammoth; returned soon after firing a blast,		1						1	15
Fatally injured by fall of coal; deceased was barring it down when it fell; he died next day,		1						1	16
Fatally injured; fell into chute; died the next day at Drifton hospital,					1			1	17
These two men were killed by the explosion of a boiler,							1	1	18
							1	1	19
This boy was fatally injured by falling under the cars; died the same evening,			1					1	20
Fatally injured: caught between car and collar; died in 5 hours,			1					1	21
Killed by fall of clod from the roof, a distance of about 28 feet,		1						1	22
Instantly killed by a fall of coal at face of gangway,		1						1	23
Fatally squeezed by a fall of coal jamming him against a car,		1						1	24
Found dead on the track; fell under mine cars,			1					1	25
Killed by a fall of coal while the same was being secured.		1						1	26
Fatally injured by premature blast; died in few hours at Drifton hospital,				1				1	27
Killed by falling down slope while going to work,					1			1	28
Fatally burned by an explosion of gas, and died next day,	1							1	29
Fell into an old breast and was drowned,					1			1	30
Instantly killed by a fall of coal while robbing a gangway,		1						1	31
Found dead near main shaft in breaker,						1		1	32
Fatally injured by a fall of clod; died next day at Drifton hospital,		1						1	33
Killed by a fall of clod, caused by want of propping.		1						1	34
Killed by fall of coal from pillar, which should have been barred down,		1						1	35
Killed by fall of top coal near face of breast,		1						1	36
Fatally injured by a premature explosion; he died on the 21st of same month,				1				1	37
Killed by a fall of coal caused by the neglect of the miner,		1						1	38
Killed by a fall of coal at said stripping,		1						1	39
Killed by an explosion of a tight cartridge, by ramming into the hole,				1				1	40
Was killed by falling into machinery while oiling,						1		1	41
Fatally injured: was caught between cars,			1					1	42
	1	19	7	3	5	3	4	42	

TABLE No. II.—*A list of non-fatal accidents in the South district of Luzerne and ending De*

Number.	Date.	Names of Persons Injured.	Occupation.	Age	Name of Collieries.
1	Jan. 3	Thomas Terry,	Miner,	46	Upper Lehigh, No. 4,
2	5	George Keisinger,	Carpenter,	27	Hollywood,
3	5	Charles Schraunn,	Miner,	40	Laurel Hill,
4	5	Peter Hugo,	Miner,	43	Hazleton Mine,
5	8	Peter Brogan,	Loader,	45	Lansford, No. 5,
6	9	Henry McNeal,	Loader,	30	Lansford, No. 4,
7	16	Jacob Trask,	Miner,	25	Stockton, No. 2,
8	16	Isaac Schade,	Miner,	27	Cranberry,
9	22	Thomas Griffith,	Miner,	40	Hazleton Mine,
10	22	Peter Tulis,	Laborer,	35	Hazleton Mine,
11	26	James McNulty,	Runner,	18	Tomhicken,
12	Feb. 2	Daniel Thomas,	Driver,	17	Drifton, No. 1,
13	4	John Rosser,	Miner,	39	Tresckow,
14	5	David Davis,	Miner,	47	Sugar Loaf,
15	6	Neal Gallagher,	Miner,	43	Pond Creek,
16	7	John Shoolin,	Laborer,	30	Lattimer, No. 2,
17	7	Eugene Julian,	Miner,	25	Lattimer, No. 2,
18	7	Patrick McCoy,	Miner,	35	Sugar Loaf,
19	7	William H. Bainbridge,	Miner,	33	Highland, No. 2,
20	12	Cornelius Canahan,	Miner,	40	Hazleton, No. 6,
21	19	John Bernhardt,	Miner,	38	Cranberry,
22	Mar. 3	H. B. Campbell,	Laborer,	21	Lansford, No. 9,
23	3	Barney Keely,	Miner,	45	Lansford, No. 9,
24	4	William Newton,	Helper,	16	Oak Dale, No. 2,
25	6	John Luina,	Laborer,	30	Laurel Hill strippings,
26	9	Martin Romanski,	Miner,	40	Highland, No. 1,
27	9	Michael Crellin,	Laborer,	18	Highland, No. 1,
28	10	Michael Ryan,	Miner,	34	Hazleton Mine,
29	11	Henry Hall,	Miner,	40	Oak Dale, No. 2,
30	11	Martin Glasgo,	Driver,	20	Hollywood,
31	11	Frank Daylozkia,	Miner,	29	Hollywood,
32	13	Andrew Rusonack,	Driver,	20	Upper Lehigh,
33	13	Phillip Rudolph,	Driver,	21	Drifton, No. 1,
34	13	James Sharp,	Footman,	18	Hazleton Mine,
35	17	James McLain,	Laborer,	60	Lansford, No. 9,
36	24	Robert Derby,	Miner,	50	Lansford, No. 5,
37	24	Henry Haas,	Miner,	49	Stockton, No. 5,
38	April 1	Thomas Donlin,	Timberman,	48	Hollywood, No. 1,
39	3	Andrew Barillo,	Laborer,	38	Beaver Brook,
40	7	John Rowland,	Jig runner,	15	Jeanesville, No. 1,
41	7	George Romano,	Laborer,	24	Stockton, No. 2,
42	15	John Watson,	Fire-boss,	43	Lansford, No. 4,
43	15	Robert Munroe,	Miner,	40	Stockton W., No. 1,
44	15	William Snyder,	Miner,	30	Stockton W., No. 1,
45	16	Wesley Updegraff,	Driver,	24	Gowen,
46	27	Henry Koch,	Laborer,	18	Hazleton Mine,
47	29	Jacob Bergraff,	Miner,	28	Stockton, No. 2,
48	29	John Fleming,	Laborer,	42	Derringer,
49	29	Michael Dugan,	Miner,	30	Harleigh,
50	May 1	John Henish,	Slate picker,	18	Lattimer, No. 3,
51	....	Harry Morgan,	Laborer,	36	Jeanesville, No. 1,
52	6	Henry Babba,	Laborer,	29	Beaver Brook,
53	7	Michael Williams,	Company man,	45	Sugar Loaf,
54	11	Rich Williams,	Miner,	35	Jeanesville, No. 1,
55	12	Michael Helis,	Driver,	18	Hazleton, No. 3,
56	16	David J. Griffith,	Miner,	30	Lansford, No. 9,
57	20	Samuel Lutz,	Miner,	36	Upper Lehigh,
58	20	Charles Kelberlock,	Slate picker,	12	Hazleton Mine,
59	20	Hugh Dinsmore,	Laborer,	50	Sugar Loaf,
60	20	John Hadley,	Miner,	35	Yorktown, No. 5,

Carbon counties, Pennsylvania, with remarks on the cause of each, for the year ember 31, 1885.

Remarks on Extent and Cause of Accidents.	Explosion of CH4 gas.	Falls of roof and coal.	By mine cars.	Explosion of blasts and powder.	Miscellaneous inside.	Miscellaneous outside.	Totals.	Number.
Severely injured by a fall of coal in his breast,		1					1	1
Injured by a plank falling on him while repairing breaker,						1	1	2
Seriously injured by a fall of clod in the Wharton,		1					1	3
Severely injured on the eye by a piece of coal flying from a pick,					1		1	4
Three ribs fractured by a kick fro n a mule,					1		1	5
Leg fractured by a rush of coal from battery,		1					1	6
Leg fractured by a rush of coal from battery,		1					1	7
Slightly injured about face and head by a premature blast,				1			1	8
Shoulder dislocated; caught while uncoupling cars,			1				1	9
Arm fractured at the elbow; caught in the same manner,			1				1	10
Fingers fractured; caught while spragging; sent to Drifton hospital,			1				1	11
Fingers fractured; caught under car wheels while spragging; sent to Drifton hospital,			1				1	12
Seriously squeezed between a car and prop while spragging in his own place,			1				1	13
Shoulder dislocated; fell into a hole from the airway,					1		1	14
Arm fractured by a fall of clod,		1					1	15
Foot fractured by a fall of coal; sent to the Drifton hospital,		1					1	16
Severely bruised about head and shoulder; fell into an old breast,					1		1	17
Hands and face burned by gas explosion result of carelessness,	1						1	18
Severely cut on the head by a piece of coal falling from the face,		1					1	19
Struck in the eye by a small piece of coal from a blast, and severely injured,				1			1	20
Severely cut on leg by a piece of coal falling from the side,		1					1	21
Severely bruised and cut by a fall of coal from pillar,		1					1	22
Leg fractured; fell into the chute of his breast,					1		1	23
Leg fractured; run over by a mine car,			1				1	24
Leg fractured by a fall of frozen clay,						1	1	25
Arm fractured; fell from a trestling,						1	1	26
Arm fractured; caught between cars at breaker,			1				1	27
Head cut and shoulder severely bruised by a fall of clod,		1					1	28
Both legs fractured and arm crushed by a fall of coal,		1					1	29
Injured on back and foot by a fall of coal,		1					1	30
Leg fractured by a fall of coal at the face,		1					1	31
Spine severely injured; fell under a mine car,			1				1	32
Thumb taken off; caught while spragging a car,			1				1	33
Collar bone broken; struck by a runaway car on slope,			1				1	34
Leg fractured by a piece of coal falling from a pillar,		1					1	35
Bruised about body and spine by a fall of coal,		1					1	36
Leg fractured by a piece of coal from pillar,		1					1	37
Leg fractured in two places and otherwise injured by the fall of a steam pipe,					1		1	38
Heel fractured by railroad car at breaker; sent to St. Luke's hospital,			1				1	39
Arm fractured; caught between belt and pulley, result of carelessness,						1	1	40
Head, face, and eyes severely injured by a premature blast,				1			1	41
Face and hands burned by an explosion of gas, while making his examination in the morning, the result of gross neglect on his part, which might have proved fatal,	1						1	42
These men were severely burned on head, face, and hands by an explosion of gas; were notified by fire-boss of existence of gas, yet heeded not the warning,	1						1	43
	1						1	44
Seriously injured by mine cars; probably his skull is fractured,			1				1	45
Leg fractured while assisting at unloading lumber at breaker,						1	1	46
Foot entirely severed by a fall of coal in the Mammoth,		1					1	47
Collar bone broken by a fall of coal in breast,		1					1	48
Severely injured by a fall of roof,		1					1	49
Arm and leg fractured; caught by belling in breaker,						1	1	50
Severely injured by falling down a chute,					1		1	51
Leg fractured; caught by mine cars,			1				1	52
Nose fractured by a kick from a mule,					1		1	53
Slightly injured by a fall of coal,		1					1	54
Leg squeezed between mine cars,			1				1	55
Shoulders and head severely injured; fell under cars,			1				1	56
Head severely cut by a piece of coal that fell from pillar,		1					1	57
Injured about body; fell in breaker while playing,						1	1	58
Head severely cut; was struck by the lever of the dump,						1	1	59
Badly squeezed by a fall of coal,		1					1	60

TABLE No. II.—

Number.	Date.	Names of Persons Injured.	Occupation.	Age.	Name of Collieries.
61	May 22	John McGlynn,	Miner,	57	Humboldt,
62	26	Solomon Thomas,	Miner,	..	Lansford, No. 3,
63	June 2	Peter Murko,	Miner,	30	Hazleton Mine,
64	3	George Ursohsky,	Miner,	38	Hollywood,
65	4	Josiah Blackwell,	Miner,	24	Stockton, No. 4,
66	6	Patrick Smith,	Slate picker,	11	Nesquehoning,
67	6	Martin Jerofin,	Laborer,	24	Hazleton Mine,
68	9	John Baxter,	Miner,	24	Jeanesville, No. 1,
69	13	Peter Martin,	Driver,	17	Lattimer,
70	15	Joseph McLaughlin,	Spragger,	18	Ebervale,
71	16	John McJallen,	Door boy,	13	Nesquehoning,
72	16	Peter Kuntz,	Miner,	34	Lansford, No. 9,
73	16	Roger McCoy,	Driver,	16	Hazleton Mine,
74	18	Barney Mundy,	Laborer,	50	Lansford, No. 9,
75	20	John Klechock,	Driver,	22	Oak Dale, No. 2,
76	23	James Sharp,	Door boy,	16	Hazleton Mine,
77	29	Francis Hunkel,	Laborer,	27	Hazleton Mine,
78	30	Paul Dobrauski,	Laborer,	22	Mt. Pleasant,
79	July 3	Fred. Young,	Assistant fireman,	42	Mt. Pleasant,
80	3	Joseph Lager,	Miner,	43	Hazleton Mine,
81	7	John Lenko,	Outside laborer,	28	Stockton, No. 2,
82	7	George Dominick,	Miner,	30	Derringer,
83	11	Martin Shistka,	Miner,	28	Gowen,
84	15	Frank Brobst,	Driver,	31	Drifton, No. 2,
85	18	John Shorlin,	Miner,	40	Lansford, No. 6,
86	20	Andrew Ferrins,	Outside laborer,	29	Humboldt,
87	20	Edward Edwards,	Miner,	24	Harleigh,
88	21	Rudolph Flail,	Miner,	50	Hollywood,
89	25	William Tarleton,	Driver,	17	Nesquehoning,
90	25	Arthur Thurlby,	Miner,	28	Sugar Loaf,
91	30	Fred. Schrader,	Laborer,	37	Eckley, No. 5,
92	Aug. 6	Lewis Owens,	Miner,	30	Tresckow, No. 9,
93	8	William White,	Miner,	22	Lansford, No. 6, Shaft,
94	8	Patrick Ward,	Miner,	28	Lansford, No. 6, Shaft,
95	10	John Fairko,	Laborer,	32	Drifton, No. 1,
96	10	James Rhoda,	Miner,	39	Upper Lehigh, No. 1,
97	15	William Ferry,	Miner,	40	Hazleton Mine,
98	17	Dominick O'Donnell,	Laborer,	25	Eckley, No. 5,
99	19	John Denneny,	Miner,	25	Eckley, No. 5,
100	21	Michael Fallon,	Miner,	46	Milnesville,
101	29	William Biglow,	Laborer,	50	Stockton, No. 1,
102	29	John Gallagher,	Miner,	30	Jeanesville, No. 1,
103	Sept. 5	Andrew Dickie,	Laborer,	22	Hazleton Mine,
104	7	Roger Boyle,	Miner,	30	Tomhicken,
105	14	George Schlafosky,	Laborer,	26	Hazleton Mine,
106	14	Thomas H. Richard,	Miner,	35	Stockton, No. 1,
107	15	John Valentine,	Miner,	40	Hazleton, No. 7,
108	18	William C. Airey,	Miner,	25	Stockton, No. 2,
109	19	Andrew Ferry,	Miner,	35	Hazleton Mine,
110	19	William Crooks,	Machinist,	19	Drifton, No. 1,
111	21	Simon Bankison,	Laborer,	41	Derringer,
112	21	John Kwapf,	Slate-picker,	13	Mt. Pleasant,
113	26	George Pollock,	Slate-boss,	20	Lansford, No. 5,
114	29	David A. Davis,	Loader,	28	Lansford, No. 9,
115	30	Leopold Bontholdo,	Miner,	30	Lattimer, No. 2,
116	30	Jacob Matis,	Miner,	35	Upper Lehigh, No. 5,
117	Oct. 3	Simon Nichols,	Miner,	38	Lansford, No. 5,
118	3	Albert Padason,	Miner,	27	Beaver Meadow,
119	3	Frank Brogan,	Miner,	20	Beaver Meadow,
120	6	Nicholas Shade,	Laborer,	22	Stockton, East, No. 1,
121	9	James Brennan,	Miner,	22	Drifton, No. 2,
122	13	John O'Roro,	Laborer,	27	Cranberry,
123	13	Tony Yonkard,	Laborer,	27	East Crystal Ridge,
124	19	Patrick McCook,	Miner,	29	Hazel Brook,
125	19	Conrad Seiple,	Helper,	17	Upper Lehigh, No. 5,
126	20	John Gaydon,	Laborer,	22	Yorktown, No. 5,

Continued.

Remarks on the Extent and Cause of Accidents.	Explosion of C H4 gas.	Falls of roof and coal.	By mine cars.	Explosion of blasts and powder.	Miscellaneous inside.	Miscellaneous outside.	Totals.	Number.
Collar bone fractured; caught between car and prop,			1				1	61
Burned on face and neck by an explosion of gas,	1						1	62
Hand blown to pieces by an explosion of dualin,				1			1	63
Hip dislocated by a fall of coal at stripping,		1					1	64
Seriously injured by a fall of coal,		1					1	65
Leg fractured by falling from breaker steps,						1	1	66
Leg fractured; fell under mine cars,			1				1	67
Squeezed between a car and a prop,			1				1	68
A toe fractured between the bumpers of mine cars,			1				1	69
Seriously injured by falling under a loaded car,			1				1	70
Arm fractured; fell under mine car,			1				1	71
Arm fractured; fell down a manway,					1		1	72
Leg badly cut by mine car; thrown from a mule,			1				1	73
Jaw broken by the tail gate of a car while unloading timber,					1		1	74
Shoulder bruised in a collision of mine cars,			1				1	75
Fell under a loaded car; arm severely squeezed,			1				1	76
Foot squeezed by a piece of coal,		1					1	77
Shoulder blade fractured by being struck by dirt truck,			1				1	78
Leg fractured by a fall of coal,		1					1	79
Wrist fractured; was struck by a piece of coal from battery,		1					1	80
Leg fractured; caught between railroad cars new breaker,			1				1	81
Shoulder blade fractured and otherwise injured by a fall of coal,		1					1	82
Compound fracture of leg by a fall of coal while barring it down,		1					1	83
Leg fractured; fell under mine car,			1				1	84
Severely injured by a rush of gob from an old breast,					1		1	85
Both legs fractured; fell while cleaning breaker,						1	1	86
Leg fractured by a fall of coal,		1					1	87
Scalp injured by a piece of coal falling on it,		1					1	88
Leg fractured; fell under cars,			1				1	89
Foot crushed by a fall of coal,		1					1	90
Two ribs fractured; struck by a piece of coal rolling down slope,					1		1	91
Severely injured by a fall of clod while in the act of barring it down,		1					1	92
Hip bone fractured by a fall of rock from side of shaft,		1					1	93
Severely bruised about hips and back by the same fall,		1					1	94
Seriously burned by an explosion of powder,				1			1	95
Leg fractured by a fall of coal,		1					1	96
Slightly injured by a fall of coal,		1					1	97
Severely injured by a fall of dividing slate,		1					1	98
Severely burned by an explosion of gas,	1						1	99
Seriously injured by a fall of coal while retimbering a gangway,		1					1	100
Collar bone fractured; fell from a car near breaker,						1	1	101
Severely injured by a fall of clod,		1					1	102
Seriously injured; fell under car on dirt bank,			1				1	103
Seriously injured; struck by flying fragments from premature blast,				1			1	104
Foot severely cut by a timber truck running over it,			1				1	105
Leg fractured by timbers falling against it,					1		1	106
Arm fractured while riding up the slope on a car,			1				1	107
Foot fractured by a rush of coal at battery,		1					1	108
Cut on shoulder by a small piece of coal falling from roof,		1					1	119
Leg fractured, and otherwise injured by locomotive jumping the track,			1				1	110
Arm fractured; struck by a piece of coal from side of gangway,		1					1	111
Collar bone fractured; he slipped and fell in breaker,						1	1	112
Arm crushed; caught in monkey rolls,						1	1	113
Leg and arm fractured; was caught by a rush of coal at battery,		1					1	114
Cut on shoulder by a piece of coal that fell from pillar,		1					1	115
Leg fractured by a fall of coal,		1					1	116
Seriously injured by a fall of fire-clay,		1					1	117
These two men were burned by an explosion of powder, caused by the carelessness of Podason, who had his lamp too near powder keg while making a cartridge; the air carried a spark from his lamp to keg,				1			1	118
				1			1	129
Left arm blown off by a premature blast, and otherwise seriously injured,				1			1	120
Slightly burned by an explosion of gas; caused by gross carelessness,	1						1	121
Injured seriously by a fall of coal near face of gangway,		1					1	122
Fell from a car while riding up slope, and seriously injured,					1		1	123
Leg fractured by a piece of coal rolling against it,		1					1	124
Caught between car bumpers, and seriously injured,			1				1	125
Leg fractured by a piece of coal rolling against it,		1					1	126

TABLE No. II.—

Number.	DATE.	Names of Persons Injured.	Occupation.	Age.	Name of Collieries.
127	20	Michael Mooney,	Miner,	26	Nesquehoning,
128	21	John Mundie,	Miner,	40	Jeanesville, No. 8,
129	30	James Zingston,	Laborer,	27	Screen Building,
130	Nov. 4	Michael Boyle,	Driver,	25	Hazle Brook,
131	6	John Carter,	Miner,	31	Milnesville,
132	9	Patrick Brady,	Miner,	30	Jeanesville, No. 1,
133	10	George Rabe,	Laborer,	40	Hazleton Mine,
134	10	Joseph Matting,	Laborer,	24	Harleigh,
135	16	Samuel Wyatt,	Timber-man,	41	Tomhicken,
136	16	James Campfer,	Helper,	17	Oakdale, No. 2,
137	17	Joseph Williams,	Miner,	30	Jeanesville, No. 4,
138	18	Michael Lzaba,	Topman,	33	Mt. Pleasant,
139	19	Andrew Kollar,	Laborer,	25	Harleigh,
140	19	August Wollenhoth,	Laborer,	40	Ebervale,
141	20	Otto Pollock,	Miner,	29	Highland,
142	21	Henry Hawks,	Miner,	30	Hazleton, No. 3,
143	23	Henry Hopit,	Miner,	27	Oakdale, No. 2,
144	27	Edward Edwards,	Miner,	33	Jeanesville, No. 4,
145	Dec. 1	David Evans,	Driver,	16	Hazleton, No. 6,
146	8	Patrick McAlarney,	Laborer,	27	Tomhicken,
147	9	John J. Johnson,	Engineer,	40	Drifton, No. 1,
148	9	James Cornne,	Laborer,	35	Hazleton Mine,
149	14	Patrick Lannon,	Miner,	42	Milnesville,
150	14	John Flinn,	Laborer,	45	Derringer,
151	16	Patrick Morley,	Driver,	17	Oakdale, No. 1,
152	21	John Moy,	Miner,	28	Crystal Ridge,
153	21	William Henne,	Miner,	35	Jeanesville, No. 4,
154	26	Patrick Boyle,	Door-boy,	14	Eckley, No. 5,
155	27	Charles M. Kreitz,	Laborer,	16	Lansford, No. 4,
156	30	Barney Hoy,	Miner,	67	Jeanesville, No. 4,
157	31	Valentine Ehner,	Driver,	16	Hollywood,

Nationality by birth of persons injured as per table No. 6: Irish, 43; Germans, 27; Hungarians, 24; English, 18; Welsh, 16; Americans, 14; Polanders, 6; Austrians, 5; Scotch, 2; Italians, 2; Swedes, 1; total, 158.

Continued.

Remarks on the Extent and Cause of Accidents.	Explosion of C H 4 gas	Falls of roof and coal.	By mine cars.	Explosion of blasts and powder.	Miscellaneous inside.	Miscellaneous outside.	Totals.	Number.
Seriously injured by a fall of coal; he was sent to Philadelphia hospital,		1					1	127
Ribs fractured, and otherwise injured by a fall of coal,		1					1	128
Leg cut off; was caught between bumpers of railroad cars near breaker,			1				1	129
Severely injured while coupling cars,			1				1	130
Eye injured; was struck by a small piece of coal from a blast,				1			1	131
Thigh fractured by a fall of coal,		1					1	132
Leg badly lacerated by a car running over it,			1				1	133
Arm fractured and leg injured by a fall of clod,		1					1	134
Collar bone fractured, and otherwise injured by a falling sill,					1		1	135
Leg injured, causing amputation; was caught between mine cars,			1				1	136
Seriously injured by a premature blast,				1			1	137
Burned by an explosion of barrel of car oil; caused by the insertion of red-hot poker,						1	1	138
Leg fractured by a fall of clod,		1					1	139
Severely injured; caught by car on slope,			1				1	140
Leg fractured by a fall of coal,		1					1	141
Squeezed by a rush of coal in chute,					1		1	142
Seriously injured by a fall of coal,		1					1	143
Back severely injured by a fall of coal,		1					1	144
Foot badly injured; caught under a mine car,			1				1	145
Leg fractured by a fall of coal and rock,		1					1	146
Arm fractured by a fall of slate while removing pump,		1					1	147
Leg fractured and head injured by a fall of coal,		1					1	148
Severely injured by a blast; Lannon going back before the blast exploded,				1			1	149
Leg fractured by a prop falling against it,					1		1	150
Leg badly injured by a car wheel running over it,			1				1	151
Toes crushed by a fall of coal,		1					1	152
Leg bruised, and otherwise injured by a fall of coal,		1					1	153
Seriously injured; was caught by mine car that jumped the track,			1				1	154
Arm fractured by a piece of frozen coal falling on it while cleaning chute,						1	1	155
Severely injured by a fall of coal,		1					1	156
Fell under mine car and seriously injured,			1				1	157
	7	63	44	12	17	15	158	

TABLE No. III.—*Number of each Class of Employés in the Fourth district, during the year 1885.*

Name of Colliery.	Number of Employees Inside.											Number of Employees Outside.										Grand totals, inside and out.
	Mine bosses.	Engineers and pumpmen.	Miners.	Miners' laborers.	Men timbering.	Road and repairmen.	Drivers and car runners.	Men at top and bottom of slopes or planes.	Oilers and door-boys.	Men employed at other work, if any.	Total inside.	Breaker and screen bosses.	Hoisting and pumping engineers.	Firemen.	Machinists.	Carpenters and blacksmiths.	Breaker men in all capacities.	Drivers.	Slate pickers.	Teamsters, choppers, stable bosses, &c.	Super'ts, assis't supt's, clerks, and book-keepers.	Total outside.	
A. Pardee & Co.,	16	8	424	186	43	28	80	26	21	9	841	26	60	33	8	51	216	8	389	31	9	831	1,672
Coxe Bros. & Co.,	8	33	636	331	101	94	102	22	57	150	1,534	15	21	35	20	62	179	7	463	32	23	860	2,394
Lehigh Coal and Navigation Co.,	6	6	382	94	107	23	99	24	52	148	948	21	31	40	3	25	219	48	319	24	3	733	1,681
Linderman, Skeer & Co.,	8	18	229	171	27	14	55	21	19	6	568	6	12	18	9	30	151	11	239	158	11	634	1,202
G. B. Markle & Co.,	4	13	341	86	. .	19	58	18	51	. . .	541	8	9	12	4	20	80	10	150	20	16	329	870
Upper Lehigh Coal Company,	5	10	135	125	. .	7	36	15	18	3	354	10	10	13	5	14	46	6	109	9	9	231	585
J. Leisenring & Co.,	2	9	189	183	. .	18	62	19	21	6	504	2	10	10	1	8	76	5	139	10	11	272	776
J. C. Haydon & Co.,	3	3	128	128	. .	9	63	10	16	15	375	9	8	16	4	8	37	10	86	10	10	198	573
Pardee Bros. & Co.,	3	6	80	29	15	4	20	8	8	8	181	6	5	5	1	12	47	6	135	6	9	232	413
G. H. Myers & Co.,	4	5	47	139	10	6	30	7	4	6	258	6	8	9	2	10	11	10	96	4	3	159	417
Pardee Sons & Co.,	3	. .	94	63	4	7	23	9	7	. . .	206	4	13	7	. .	8	52	2	105	5	4	200	406
Ebervale Coal Company,	2	6	64	17	12	4	21	9	. . .	6	141	3	4	15	2	4	39	5	67	22	10	171	312
William T. Carter & Co.,	2	7	59	58	2	5	32	10	4	. . .	179	3	7	8	1	7	26	11	72	2	4	141	320
Miscellaneous companies,	10	20	397	299	17	31	83	53	36	75	1,031	24	41	44	9	53	344	24	502	26	28	1,095	2,116
Men at stripping and other work,	. .	. .	. . . .	. . . .	. .	. . .	. . .	. . .	. . .	. . .	. . . .	. . .	. . .	. .	. .	. . . .	. . . .	. .	. . . .	. . .	. . .	. . . .	487
	76	144	3,205	1,859	338	264	764	251	314	432	7,651	143	242	265	69	312	1,523	163	2,861	359	150	6,086	14,224

TABLE No. V.—*Gives the total number of tons of coal mined in the Fourth district, number of days worked, ratio of coal mined per day, number of employés, number of persons killed and injured, ratio of coal mined per person killed and per person injured, number of kegs of powder used, for the year 1885.*

NAMES OF COLLIERIES.	Total production of each colliery for the year 1885, in tons.	Number of days worked.	Ratio of coal mined per day, in tons.	Number of employees.	Number of fatal accidents.	Ratio of coal mined per fatal accident.	Number of non-fatal accidents.	Ratio of coal mined per non-fatal accidents.	Number of kegs of powder used.
A. Pardee & Co.,	530,806	182.2	2,913	1,672	3	176,935	36	14,744	7,827
Coxe Brothers & Co.,	893,487	245	3,646	2,391	9	99,276	17	55,558	21,069
Lehigh Coal and Navigation Company,	598,905	234	2,559	1,681	1	598,905	22	27,223	5,004
Linderman, Skeer & Co.,	440,552	220	2,001	1,202	2	220,276	14	31,468	6,151
G. B. Markle & Co.,	397,553	167.7	2,369	870	2	198,776	10	39,755	7,809
Upper Lehigh Coal Company,	373,491	220.5	1,691	585	3	124,497	6	62,249	7,341
J. Leisenring & Co.,	409,937	239	1,715	776	5	81,987	6	68,323	6,559
J. C. Haydon & Co.,	215,126	220	1,144	573	2	122,563	11	22,284	4,193
Pardee Brothers & Co.,	216,281	173.3	1,248	413	1	216,281	6	36,047	3,300
G. H. Myers & Co.,	189,193	200.5	946	417	6	31,532	2	94,596	5,538
Miscellaneous Companies,	1,240,312	192.7	6,436	3,174	8	155,026	28	44,293	24,610
Men at strippings and other work,	.....	.....	.....	487	.....	.....	.....	.....	.....
Totals,	5,535,543	208.6	26,536	14,224	42	131,798	158	350,035	99,631

FIFTH DISTRICT.

OFFICE OF INSPECTOR OF MINES,
GIRARDVILLE, PA., *March 13, 1886.*

To Hon. J. SIMPSON AFRICA, *Secretary of Internal Affairs:*

SIR: In compliance with the provisions of an act of the General Assembly of this Commonwealth, entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith," approved June 30, A. D. 1885, I have the honor of presenting herewith the annual report of the Fifth inspection district of Schuylkill.

My term of office as inspector of the Fifth district commenced on the 22d day of September, 1885. The previous part of the year was under the care of my predecessor, Mr. Robert Mauchline, and under the head of fatal and non-fatal casualties, and the causes relative thereto, is a report for the whole year.

The accompanying tables will show their usefulness in connection with the annual report to all concerned in the working and mining of anthracite coal, and a careful perusal and analysis of them will not fail to elicit from the reader acquainted with the dangers attending the mining of coal that some of the accidents at least should not have occurred.

Referring to table No. 4, we have the fatal and non-fatal casualties for five years, and in proof of what has been already stated, it would not be too much to say that the deaths resulting from explosions of blasting material, crushed by mine cars, coal flying from shots, premature explosions, are the result of absolute carelessness on the part of the workmen themselves.

The accidents resulting from falls of coal and roof, as shown in table No. 4, are indeed very high in number, and some of these could also have been avoided. We feel sorry to have to report that men lose their lives in using blasting material by an imprudent use of it, who will, in the absence of those having authority over them, fill cartridges with their lamps on their heads, choosing to take the risk of a spark from the lamp falling into their keg of powder, rather than remove it a distance of five feet from them as prescribed by the mine law.

We have also the unpleasant duty to report one death, from being struck with coal flying from a shot, and it is somewhat astonishing that men will stand so near to a blast, rather than retreat to a place of safety, and in many cases do not intimate to their fellow-workmen that they are going to fire.

Premature explosions are generally the result of undue care of those preparing to blast; it may be a hole is very irregularly drilled, and sometimes the cartridge is made too large; in either case, there is difficulty in getting the charge to the back of the hole, and the man charging will try to force back the powder; in doing so the cartridge bursts, scattering the powder all along to the mouth of the hole. With lamp in hand, the miner makes an examination, which has, in some cases, ignited the particles of powder, causing a premature explosion. We have also instances of men driving the needle to the back of the hole, until the needle has been turned or bent by coming in contact with the coal, and how often is it said in using the safety squib, "I always take a bit off the match." The law provides that the miner shall have his needle pointed with at least six inches of copper, as a means of preventing premature explosions, but very few indeed have complied with its requirements, and it is with difficulty that the workmen generally will comply with the spirit of the law, unless some one having authority is constantly with them. These few months' experience as mine inspector compels me to make the statement with only one end in view, that it may be the means of preventing accidents in the future, hoping that those working in and about the mines will see to it that the law is not trampled on by them.

Accidents resulting from being crushed by mine cars are getting to be a more prolific source in adding to the numbers of fatal and non-fatal casualties, in connection with mining of coal in this district, than from explosions of fire-damp.

We find men voluntarily facing death, and even those not engaged with the transportation department of a colliery getting on top of loaded cars to ride out the gangway; also standing on the bumpers and between the cars, getting on the high side of gangway when cars are passing in and out, instead of standing on the low side, where there is plenty of room for all purposes, and unhappily we have periodically to report a fatal accident the result of such practices.

These I have enumerated, knowing them to be true from practical experience, hoping the officers in charge will exercise strict discipline in the future, to prevent accidents from such sources and from whatever cause, and that the workmen themselves will discontinue the practice of taking risks they are not called upon to do, and to understand that the law is a protection against the workman himself.

I would here suggest that, in my opinion, if the Commonwealth would publish, say three hundred copies of the annual report to be given to each inspector for distribution to the bosses and reading workmen in his district, it would augur well for the future success in reducing the number of accidents.

William Stein,
Mine Inspector.

TABLE No. I.—*Comparative statement of fatal and non-fatal casualties for the years 1884 and 1885.*

Fatal Casualties.

	Years.	
	1884.	1885.
Explosions of fire-damp,	2	4
Suffocated by gas,	.....	.....
Explosions of blasting material,	6	5
Premature explosions,	.....	.....
By coal flying from shots,	.....	1
Falls of coal and roof,	20	25
Crushed by mine cars,	8	4
By machiney underground,	.....	.....
By machinery on surface,	1	1
Breaking of ropes and chains,	.....	.....
Falling down shafts and slopes,	4	3
Explosions of boilers,	.....	2
Miscellaneous,	2	8
Totals,	43	53

Number of Fatal Accidents and Amount of Coal Produced per Life Lost.

	No. of fatal accident.	Tons of coal mined per fatal accident.
Philadelphia and Reading Coal and Iron Company,	22	130,559
Lehigh Valley Coal Company,	6	76,801 $\frac{8}{10}$
Lehigh and Wilkes-Barre Coal Company,	1	392,734
Individual firms,	24	39,757 $\frac{8}{10}$

TABLE No. II.—*Non-fatal casualties.*

	YEARS.	
	1884.	1885.
Explosions of fire-damp,	26	9
Suffocated by gas,		
Explosions of blasting material,		
Premature explosions,	11	2
By coal flying from shots,		4
Falls of coal and roof,	47	29
Crushed by mine cars,	23	17
By machinery underground,		1
By machinery on surface,	3	3
Breaking of ropes and chains		1
Falling down shafts and slopes,	7	2
Explosions of boilers,	1	2
Misce laneous,	20	35
Totals,	138	105

TABLE No. III.—*Showing the amount of coal produced and shipped during the years 1884 and 1885 respectively.*

	YEARS.	
	1884.	1885.
Amount of coal shipped,	4,246,849.08	4,493,040.11
Amount of coal produced,	4,512,800.07	4,781,517.14

TABLE No. IV.—*Comparisons between the years 1884 and 1885.*

	YEARS.	
	1884.	1885.
Number of persons employed,	14,884	15,151
Tons of coal produced per life lost,	104,948.18	90,217 3/10
Ratio of employés per lives lost,	346 1/4	285 8/10
Number of tons mined per each personal injury,	37,701.09	30,262 7/10
Average number of tons mined per employé,	303 8/10	315 7/10
Ratio of employés per each personal injury,	82 8/10	95 9/10

TABLE No. V.—*Taking the death rate per thousand as a basis of comparison between the different companies and individual operations, we have the following ratio for the year 1885.*

	Number of employés.	Number of deaths.	Death rate per thousand.
Philadelphia and Reading Coal and Iron Co.,	8,958	22	2.45
Lehigh and Wilkes-Barre Coal Company,	954	1	0.95
Lehigh Valley Coal Company,	1,517	6	3.95
Individual firms,	3,722	24	6.46
Totals,	15,151	53	3.49

TABLE No. VI.—*Comparative statement of fatal and non-fatal casualties and their causes for five years.*

Fatal Casualties.

	Years.					Totals for five years.	Aggregate.
	1881.	1882.	1883.	1884.	1885.		
Explosions of fire-damp,	1	6	6	2	4	19	
Suffocated by gas,	2	1				3	
Explosions of blasting material,	2		2	6	5	15	
Premature explosions,		1	6			7	
By coal flying from shots,		1			1	2	
Falls of coal and roof,	16	14	14	20	25	89	
Crushed by mine cars,	9	7	8	8	4	35	
By machinery underground,							
By machinery on surface,	1	2	4	1	1	9	
Breaking of ropes and chains,							
Falling down shafts and slopes,		3		4	3	10	
Explosions of boilers,	1		3		2	6	
Miscellaneous,	2	5	3	2	8	20	
Totals of the respective years,	34	40	46	43	53		216
Non-fatal casualties:							
Explosions of fire-damp,	15	18	22	26	9	90	
Suffocated by gas,		2				2	
Explosions of blasting material,		2	5			7	
Premature explosions,	4	1	5	11	2	23	
By coal flying from shots,	2	3	5		4	14	
Falls of coal and roof,	68	57	42	47	29	243	
Crushed by mine cars,	42	38	26	23	17	146	
By machinery underground,	1				1	2	
By machinery on surface,	4	6	3	3	3	19	
Breaking of ropes and chains,					1	1	
Falling down shafts and slopes,		2		7	2	11	
Explosions of boilers,				1	2	3	
Miscellaneous,	13	38	26	20	35	132	693
Totals of the respective years,	149	167	134	138	105		693

TABLE No. VII.—*Comparative statement of casualties, tonnage, and employés for five years in Fifth inspection district, or Mahanoy mining division, of Schuylkill.*

YEAR.	Killed.	Injured.	Total.	Total number of employees.	Number of employees to each casualty.	Total number of tons of coal mined.	Number of tons of coal mined to each fatal casualty.	Number of tons of coal mined to each non-fatal casualty.	Ratio of tons of coal to each casualty.	Number of tons of coal mined to each employee.
1881, ...	34	149	183	10,911	59.65	4,504,624.06	132,488.01	30,232.02	24,615.02	412.01
1882, ...	40	167	208	12,361	59.75	4,661,024.12	116,525.02	27,910.01	22,517.00	377.09
1883, ...	59	131	180	13,399	74	4,851,724.19	103,292.00	36,229.00	26,821.10	366.10
1884, ...	46	138	181	14,884	82.30	4,512,800.07	104,918.18	32,701.09	24,987.06	303.04
1885, ...	43	105	158	15,151	95.90	4,781,517.14	90,217.30	45,568.20	30,262.70	315.59
Total, ...	216	693	909	66,706	371.50	23,251,689.58	547,470.51	172,710.32	129,202.88	1,773.83
Average, ...	43.20	138.60	181.80	13,341.20	74.30	4,650,337.91	109,494.10	34,542.06	25,840.57	354.76

Descriptive Record of Fatal Accidents.

September 30. Nicholas Wildschock, a laborer, at Ellangowan colliery, was fatally injured in attempting to couple cars while in motion, and died in a few hours after the accident occurred.

October 9. James Bartlett, a miner, at North Laurel Ridge colliery, was fatally injured by a fall of the overlying benches of coal, and died six hours after the accident. Deceased and his butty, Charles Burchill, were working at what is called robbing pillars; they were both drilling a hole in the bottom bench when a piece of overhanging coal fell.

At this colliery the coal is all got from robbing, and, as a matter of course, the gradual subsidence going on is more effective in fracturing off wings of coal than when constructing a colliery, and when examining the place of the accident, I advised the necessity of the workman blasting down the wings of coal rather than take the risk of working under them, which, if done, would be the means of saving many lives.

October 30. Patrick O'Donnell, a gangway laborer, at Buck Mountain colliery, was instantly killed by a fall of top slate at face of gangway.

In making my examination of the surroundings after the accident, I came to the conclusion that the miner in charge of the shift was not a competent workman, because the top was very much dislocated, which ought to have suggested to the mind of an experienced miner the necessity of securing the top by putting up timber.

November 7. John Morning, a miner, at Suffolk colliery, was killed instantly by a fall of the top benches of coal. Deceased had fired a shot in the bottom bench and was barring out coal which the shot had shattered, and the overlying benches fell on him. In examining the place where he was killed, I found the coal very slippery, and to a careful experienced

miner but little examination was necessary to determine that it was unsafe to do as this man did.

November 17. George Betteler, a starter, at Boston Run colliery, was fatally injured by a fall of coal at battery, caused by a large piece of coal knocking out battery prop; his injuries proved fatal eight hours after the accident.

December 10. Paul Wiseman, a gangway laborer, at Schuylkill colliery, was instantly killed by a fall of top coal at face of gangway. I made the necessary examination relative to the cause of the accident. Patrick McCarty, the miner on the shift previous to the morning the accident occurred, should have stood double timber, which was supplied him when he commenced his shift. Instead of doing so, he continued cutting coal, and at the finish of his night's work the gangway face was sixteen feet in advance of the double timber. Henry Warning, the day shift miner, found it necessary to stand timber and commenced his day's work in making the necessary arrangements, and while deceased was cutting a leg hole, five tons of coal fell on him. The jury rendered a verdict against McCarty and Warning as being responsible for the death of Paul Wiseman.

December 18. James Charles, a loader, at Park, No. 3, slope, was instantly killed by being run over with the cars on slope track. Deceased was standing at the upper lift while the cars were being hoisted from the lower lift with ten men on; he attempted to get on the cars as they passed, and was dragged a distance of forty feet before he could be extricated.

IMPROVEMENTS AT COLLIERIES.

Girard Colliery.

A two (2″) gas pipe line, nine hundred and fifty feet long, has been laid from the Girard estate pipe line to the colliery stable, supplying the mules with water.

West Bear Ridge.

A new gunboat tower at head of hoisting slope is still under construction. A new nest of four boilers, thirty feet long by thirty-four inches diameter, with blowers and all fixings complete, has been erected. A new frame boiler-house, 55′×19′, with sheet iron roof, built over above boilers. A line of 5″ cast pipe, four hundred and ninety-three feet long, has been put in position, carrying steam from the boilers south of breaker to slope engines. New frame stable, 53′×51½′×14′, has been built. The hoisting slope on the Mammoth vein is being retimbered and repaired, and the cages in use on the slope are to be replaced by gunboats. The pump slope on the Primrose vein has been retimbered, and is now in good condition. The steam pipe way on the Primrose vein has been retimbered with white oak timber from the first lift to the surface, and is now in good condition.

Hammond Colliery.

A No. 9 Cameron feed pump and a No. 100 Allison & Bannan feed pump

have been put in position at the boilers near the slope. A new frame boiler-house, 52′×22′×10½′, has been built. Six 4,000-gallon tanks have been erected to receive water from the Girard estate reservoir. A steam heater, twelve feet long and twenty inches diameter, has been placed at bottom of slope, supplying heat to the men employed in that locality. A new airway, one hundred and five and two thirds yards long, has been driven from the Holmes vein, west gangway, to the surface. Also a new airway, eighty-one and two thirds yards long, and a shaft ten and two thirds yards deep, has been driven from the Holmes vein, east gangway, to the surface.

Conner Colliery.

The trestle at the head of dirt plane, sixty-four feet long and sixteen feet wide, has been rebuilt.

Schuylkill Colliery.

Put in breaker, one set of elevators, and one stove coal screen.

North Mahanoy Colliery.

Breaker extensively repaired during the year 1885. Put in picking tables in breaker. A new frame carpenter and blacksmith shop, 25′×50′, with sheet-iron roof, has been erected. Also a new frame powder-house, 10′×12′. During the year, a tunnel was driven from third lift, south gangway, north Seven-Foot slope to the Skidmore vein, cutting the vein at fifty-four and two thirds yards, showing the following section:

Bone and coal,	2′	7″
coal,	6′	4″
	8′	11″ dip, 13° west.

Gangways have been driven north and south, and an air-shaft, sixty-five feet deep, was sunk to the bottom split of the Mammoth vein water level, west gangway.

Mahanoy City Colliery.

Breaker has been thoroughly overhauled and remodeled. Put in forty-two picking chutes, fifty-four picking tables, forty slate chutes, and one hundred and eight telegraphs; also covered lump coal chutes with roofing-iron. In the Holmes vein, north dip, lower lift, east gangway, breast 28 is now being driven up center of basin, and has reached a distance of four hundred and thirty yards, it may possibly be used for a plane.

Tunnel Ridge Colliery.

Nothing done but pumping water all year.

Mahanoy Jig-House.

A new frame addition to jig-house, 140′×35′, with sheet-iron roof, has been erected. One set of dirt scrapers on north side of jig-house has been erected, and also one set of dirt scrapers on south side, one hundred and seventy-five feet long, with eighty-seven scrapers.

Two boilers, thirty feet long and thirty-four inches diameter, with blowers and water and steam connections complete, have been erected, and frame addition to boiler-house, 12′×75′, with sheet-iron roof.

St. Nicholas Colliery.

Nothing done but pumping water during the year.

Suffolk Colliery.

In West Diamond gangway an airway, one hundred and fifty-one and two thirds yards has been driven. In West Primrose gangway an airway has been driven ninety-two yards long.

Bear Run Colliery.

A set of dirt scrapers have been put in at breaker, one hundred and ten feet long, with 16″ buckets and troughs complete; one set of elevators, forty three feet high, 18″ buckets; one frame elevator house, 20′×16′; one single dirt trestle erected, two hundred and ninety-two feet long, ten feet wide, and forty feet high. A cribbing has been constructed at south end of breaker, seventy-five feet long and eighteen feet high. Also erected a new frame boiler-house, 87′×50′; one set of slush scrapers on above trestle two hundred and ninety-two feet long, with troughs, pulleys, &c., complete.

A new plane in Seven-Foot vein, west gangway, ninety yards long, was constructed with all machinery complete. A tunnel from Buck Mountain vein, plane level, to Seven-Foot vein is in course of construction, and is now sixteen yards.

Gilberton Colliery.

One new 9″×38″ steam pump was put in upper lift, one new 9″×38″ steam pump was put in lower lift, one new 9″×38″ steam pump was put in at furnace gangway bore hole. Pump not yet in use. Breaker repaired. Chutes and picking tables put in. New frame lamp-house, 10′×12′, erected. A tunnel from Buck Mountain vein, lower lift, was driven north twelve yards to back vein. Furnace slope was completed from surface to Gilberton colliery, lower lift, two hundred and ninety-five and one third yards long, and another lift is in course of construction from this level.

Stanton Colliery.

At Tender slope. Tender engine, pumping engine, &c., have been thoroughly repaired, and now in good condition. An airway, one hundred and forty-eight yards long, was driven from Buck Mountain vein, first lift workings, and timbered complete, and new fan erected, eighteen inches diameter, with direct acting engine, 14″ cylinder and 24″ stroke. All the boilers and houses have been repaired. A new frame shipping office, 12′×14′; lamp-house, 10′×12′; tool house, 8′×12′, have been erected.

Lawrence Colliery.

A new slope on Little vein has been sunk a distance of four hundred

and thirty and two thirds yards, well timbered with 19′ collar, 23′ mud sill, and 9½′ legs. A new cleaner and separator, with two large screens, one pair of hoisting engines, cylinders, 30″×40″, and new drum, seventeen feet diameter, have been erected. Twelve new boilers have also been put in, and two new boiler-houses built. The cost for the total improvements amounting to $85,000 60.

Kehley Run

Took out ten old boilers, and replaced them with new ones of improved make and iron. Built a new dam to supply colliery with water, and laid a new 4″ pipe line to colliery. Repaired breaker chutes, and put in part new stringers, posts, new partitions, and bottoms. Also rebuilt foundation walls.

Primrose Colliery.

A new slope has been sunk across the dip in Buck Mountain vein to a depth of six hundred feet, vein dips 40°, slope dips 20°, direction of slope, 3° north of west. At bottom of new slope a tunnel is being driven north to cut the Seven-Foot vein, and is now in fifty feet.

South Laurel Ridge Colliery.

Two new boilers have been put in, 30′×34′, one Allison steam pump, 10″ plunger and 4′ stroke, 25″ cylinder, and a new 12′ fan.

Glendon Colliery.

Built dirt trestle over Lehigh Valley railroad. Put in four new boilers thirty feet long, diameter thirty-four inches. Put up a new sixteen-foot and made new airway for same. Constructed a manway from lower gangway, Ten-Foot vein, to water level. A tunnel from Buck Mountain vein to Seven-Foot vein, a distance of sixty-four feet, has been driven.

General Condition of the Collieries.

I am glad to be able to state that the mines in this district are practically safe. There are some localities in a few of them, however, poorly ventilated, and while I make this statement, it is but justice to say that those having charge of the mines are making praiseworthy efforts to improve the ventilation, as well as the general safety, in erecting new fans and making additional outlets, and from the disposition manifested on the part of the mining officials, it would be safe to expect a marked improvement in the condition of the mines at the close of 1886, compared with 1885.

I would here thank the superintendents, inside and outside foremen for their uniform courtesy toward me, hoping that our coöperation may be so blessed, that we may have fewer accidents this year than we had last, and there is no good reason why we should not.

The following is a report of improvements made at the collieries in the Shenandoah district, of the Philadelphia and Reading Coal and Iron Company during the year 1885:

13 Mines.

Ellangowan Colliery.

An addition of 16′×24′ with sheet-iron roof, has been built on each end of the building used as smith and carpenter shops, making the entire building 78′×24′. The old stone forges have been torn out, and replaced by three new cast-iron forges with sheet-iron stacks. A new engine, 8″ cylinder, 12″ stroke, and 5′ fly-wheel, with a 36″ fan for blacksmith blast, have also been put in the shop. The office has been enlarged by the addition of another room, 12′×16′.

A plank hose house, 16′×10′, has been built, and furnished with seven hundred feet of hose on two crabs, with extra couplings for attachment to the Shenandoah fire department's hose.

A tunnel, forty-five yards long, has been driven from the Seven-Foot vein counter gangway to the Buck Mountain vein.

Knickerbocker Colliery.

A tunnel, twenty-one and two thirds yards long, has been driven from the Skidmore vein, first lift, east gangway, to the Seven-Foot vein.

The track has been relaid in the old Barry tunnel, twenty-seven yards long, to the "bottom split" of the Mammoth vein, and the old east gangway re opened and driven ahead.

A new airway, one hundred and sixty-two and two thirds yards long, has been driven from the Barry tunnel, Buck Mountain vein, west gangway, to the surface, and a fan will soon be erected on this airway.

A new slope is now being sunk to the local basin in the Holmes vein, five hundred yards west of the old slope, and is now down ninety-five yards from the surface.

A new frame engine-house, with engine 16″ cylinder×36″ stroke, and drum 7′ diameter and 10′ long, have been erected on top of new slope; also, a trestle 120′ long×22′ high×16′ to 36′ wide. A new railroad, two thousand feet long with necessary turn-outs, from new slope landing to breaker top.

Four new boilers, 30′ long×34″ diameter, with dirt burning apparatus complete; boilers connected with Anthracite Water Company's six inch main from Waste House run.

A new locomotive house, 16′×22′, with sheet-iron roof, has been built near the old shops for locomotive, to be used from breaker tip to head of both slopes. A new locomotive house, 17′×44′, with sheet-iron roof, has been built near the drift mouth; also a new stable, 100′×38′, with sheet-iron roof. A new airway, one hundred and ten and two thirds yards long, has also been driven from the Barry tunnel, Seven-Foot vein, east gangway, to the surface.

Indian Ridge Colliery.

The Indian Ridge and Plank Ridge collieries were idle during January and February, during which time Indian Ridge breaker underwent repairs

and alterations necessary to prepare all the coal mined at the Plank Ridge colliery, and the Plank Ridge breaker has been completely torn down. Four new boilers, 30′×34″, have been built, with dirt burning apparatus complete. The old water heaters have been torn out, and two new heaters, 34′×34″, put in their place. A new counter chute, sixty yards long, has been made in the west north dip gangway, as a receptacle for coal mined from the Plank Ridge upper workings. A new slope is in course of construction in the Buck Mountain vein, Plank Ridge, west gangway, directly under the slope in the Mammoth vein, and the old engine and drum formerly used for the Mammoth vein slope is now used for the new Buck Mountain slope, the rope passing down the old air shaft from Mammoth to Buck Mountain, thence through a rope heading to head of new slope. An airway is being driven parallel with this slope. Also a slope has been started in the Plank Ridge Seven-Foot vein, directly over the Buck Mountain slope. A new hoisting engine, cylinder 14″×22″ stroke, with drum 5′ 3″ diameter, and 5′ long, has been put in position for this slope, the rope passing down the same air-shaft to the Seven-Foot vein, thence through a rope heading, one hundred and sixty yards long, to head of slope. The transportation from the head of these two slopes is through a tunnel driven south across the measures from the West Mammoth gangway of Indian Ridge shaft.

Shenandoah City Colliery.

After the boiler explosion, August 11, 1885, the hoisting engine and pumps were connected with the Plank Ridge boilers, and four new boilers, 30′×34″, with dirt burning apparatus; these, with a few of the boilers formerly at Plank Ridge, now furnish all the steam for the Shenandoah City colliery slope. Two new boilers, 30′×34″, have been built at the breaker, and four new boilers, 30′×34″, have been put up at the bore hole, all furnished with dirt burning apparatus complete. The old tubular boilers at the bore hole have been removed. The old single breaker has been remodeled and enlarged and fitted up with a complete new set of steel-toothed rollers, screens, and all necessary machinery for the thorough preparation of coal. The old engine in the double breaker has been taken away and replaced by a new one, cylinder 18″×60″ stroke, with a 16′-fly-wheel, which runs all the machinery in the triple breaker. In the new underground slope two lifts have been opened with an east and west gangway on each lift, making four gangways now working from this slope. A new tunnel, forty-six yards long, has been driven from the Seven-Foot vein slope workings to the Mammoth vein, so as to abandon about five hundred yards of Mammoth gangway, which required constant retimbering, and which also increases safety in traveling the main avenue.

Turkey Run Colliery.

In the new slope, west gangway, a tunnel has been started to be driven to the Seven-Foot vein. It is now in fifty yards. A drift has been opened on the Four-Foot vein, underlying the Holmes; the coal is good and hard.

West Shenandoah Colliery.

A new water heater, 30′×34″, and a No. 3 Blake pump have been put in place for feeding boilers. A wooden culvert, two hundred feet long, has been built, leading from the pump discharge at Buck Mountain slope to the creek. The upper part of the slope has been enlarged and retimbered.

Kohinoor Colliery.

A line of 2″ gas pipe has been run through the picking chutes, and the picking rooms are now heated with steam. Eleven of the old boilers have been taken out and replaced by twelve new ones, 30′×34″, with dirt burning apparatus. The boards enclosing the shaft frame, and all unnecessary lumber about it, have been torn away. The weather boarding on the shaft and breaker engine and compressor houses has been replaced by sheet-iron and sheet-iron roofs, thus diminishing the liability to fires.

In the east slope, No. 2, a Philadelphia and Reading Coal and Iron Company's steam-pump, 13″ cylinder ×18″ stroke and 7″ plunger, has been put in place, and another of the same type, with 18″ cylinder ×38″ inch stroke and 9″ plunger, has been put in the west slope. A new lamp-house, 14′×12′ with sheet-iron roof, has been built for trimming and repairing the safety lamps.

A new second outlet and airway has been made from the shaft level west gangway in No. 1 shaft to the surface, which includes a tunnel twenty-six yards long, from the Mammoth to the Skidmore vein; the airway and traveling way in Skidmore vein is two hundred and forty yards long, on an average pitch of twenty-one and one half degrees, and a shaft was sunk from surface to Skidmore, fifty-eight yards deep; area of shaft is 9′×12′

The airway and traveling way in Skidmore vein is timbered with three rows of oak props, with steps and hand-rail put in on the east side, from gangway to foot of outlet shaft. In the shaft a series of easy stairways in stages of eight feet in height, all rising in the same direction, with a level platform or landing nine feet long, from the head of each stairway to the foot of the next one above, has been built from the Skidmore vein to the surface.

The sinking of this shaft was indispensably necessary, and was a very difficult piece of mining, requiring great care and skill, owing to the Mammoth vein having been robbed at this point, and the old workings filled up with the loose rock and slate from the crushed measures above.

I visited this work several times while in course of construction, in company with John L. Williams, division mining superintenent, who evidently took special interest in its construction and in expediting its conpletion. This colliery is now placed in the position of having one of the best outlets in the anthracite region, which could not be said of it while in the possession of its former owners. I am very much indebted to Messrs. Weiser, Luther and Pollard, assistant civil and mining engineers with the Philadelphia and Reading Coal and Iron Company, in giving me information relative to the improvements made at the collieries in their respective districts.

TABLE I. *–Showing location of collieries in the Fifth Inspection Mine District.*

Name of Colliery.	Name of Operator.	Location—County.	Name of Superintendent.	Post-Office Address.
Boston Run,	Philadelphia and Reading Coal and Iron Co.,	St. Nicholas, Schuylkill co.,	John Veith,	Pottsville.
Bear Run,	do. do.	do. do.	do.	do
Buck Mountain,	Buck Mountain Coal Company,	Mahanoy City, do.	Philip Conrad,	Buck Mountain.
Connor,	Philadelphia and Reading Coal and Iron Co.,	Girardville, do.	John Veith,	Pottsville.
Cuyler,	S. M. Heaton & Co.,	Raven Run, do.	do.	do.
Cambridge,	Cambridge Coal Company,	Shenandoah, do.	do.	do.
Draper,	Oliver Disston,	Gilberton, do.	E. J. Phillips,	Gilberton.
Ellangowan,	Philadelphia and Reading Coal and Iron Co.,	Maple Dale, do.	John Veith,	Pottsville.
Elmwood,	do. do.	Mahanoy City, do.	do.	do.
East Bear Ridge,	do. do.	Mahanoy Plane, do.	do.	do.
Girard,	do. do.	Girardville, do.	do.	do.
Girard, Mammoth,	do. do.	Raven Run, do.	do.	do.
Gilberton,	do. do.	Gilberton, do.	do.	do.
Glendon,	J. C. Haydon & Co.,	Mahanoy City, do.	William P. Daniels,	Mahanoy City.
Hammond,	Philadelphia and Reading Coal and Iron Co.,	Girardville, do.		
Honey Brook, No. 1,	Lehigh and Wilkes-Barre Coal Company,	Audenreid, do.	J. I. Hollenbeck,	Audenreid.
Honey Brook, No. 4,	do. do.	do. do.	do.	do.
Honey Brook, No. 5,	do. do.	do. do.	do.	do.
Indian Ridge,	Philadelphia and Reading Coal and Iron Co.,	Shenandoah, do.	John Veith,	Pottsville.
Knickerbocker,	do. do.	Yatesville, do.	do.	do.
Kohinoor,	do. do.	Shenandoah, do.	do.	do.
Kehley Run,	Thomas Coal Company,	do. do.	Thomas Baird,	Shenandoah.
Lawrence,	Lawrence & Brown,	Mahanoy Plane, do.	George L. Brown,	Mahanoy Plane.
Locust Mountain,	W. J. Lloyd,	Shenandoah, do.	W. J. Lloyd,	Shenandoah.
Mahanoy City,	Philadelphia and Reading Coal and Iron Co.,	Mahanoy City, do.	John Veith,	Pottsville.
North Mahanoy,	do. do.	do. do.	do.	do.
North Laurel Ridge,	S. H. Barratt,	Gilberton, do.	J. H. Denning,	Gilberton.
Packer, No. 1,	Lehigh Valley Coal Company,	Colorado, do.	Colonel D. P. Brown,	Lost Creek.
Packer, No. 2,	do. do.	Lost Creek, do.	do.	do.
Packer, No. 3,	do. do	Brownsville, do.	do.	do.
Packer, No. 4,	do. do.	Lost Creek, do.	do.	do.
Packer, No. 5,	do. do.	Rappahannock, do.	do.	do.
Park, No. 1,	Lentz, Lilly & Co.,	Park Place, do.	Edward Reese,	Centralia, Columbia county.
Park, No. 2,	do.	do. do.	do.	do. do.
Primrose,	Nevills & Co.,	Mahanoy City, do.	James Wynn,	Mahanoy City.
St. Nicholas,	Philadelphia and Reading Coal and Iron Co.,	St. Nicholas, do.	John Veith,	Pottsville.
Schuylkill,	do. do.	Mahanoy City, do.	do.	do.
Suffolk,	do. do.	St. Nicholas, do.	do.	do.
Shenandoah City,	do. do.	Shenandoah, do.	do.	do.
Stanton,	do do.	Maizeville, do.	do.	do.
South Laurel Ridge,	S. H. Barratt,	Gilberton, do.	J. H. Denning,	Gilberton.
Silver Brook,	Silver Brook Coal Company,	Audenreid, do.	William J. Harris,	Audenreid.
Turkey Run,	Philadelphia and Reading Coal and Iron Co.,	Shenandoah, do.	John Veith,	Pottsville.
Tunnel Ridge,	do. do.	Mahanoy City, do.	do.	do.
West Shenandoah,	do. do.	Shenandoah, do.	do.	do.
West Bear Ridge,	do. do.	Mahanoy Plane, do.	do.	do.
William Penn,	William Penn Coal Company,	Shaft P. O., do.	William H. Lewis,	Shaft P. O.

TABLE II.—*Showing character of coal, production, number of employés, days employed, casualties, &c., in the Fifth Inspection Mine District, for the year, A. D. 1885.*

COLLIERIES.	Operators.	Character of coal, (Anthracite or Semi-Anthracite Bituminous or Semi-Bituminous.)	Drift, slope, or shaft.	Number of inside workmen.	Number of outside workmen.	Total employees.	Number of days worked inside.	Number of days worked outside.	Number of horses and mules.	PRODUCTION.		CASUALTIES.				
										Number of tons produced.	Number of tons shipped.	Killed inside.	Killed outside.	Injured inside.	Injured outside.	Total killed and injured
Boston Run,	Phila. and Reading C. & I. Co.,	Anthracite	Slope,	104	109	213		231½	27	107,619.09	102,619.09	1				1
Bear Run,	do. do.	do.	Slope,	219	148	397		232½	27	140,255.04	134,255.04		1		2	3
Buck Mountain,	Buck Mountain Coal Company,	do.	Slope,	170	123	293		231½	21	86,530	80,452	1		3		4
Connor,	Phila. and Reading C. & I. Co.,	do.	2 drifts,	153	128	281		233	37	138,059 02	130,059.02	1		2	1	4
Cuyler,	S. M. Heaton & Co.,	do.	Drift,	92	132	224		62	31	26,232.18	25,232.18	10				10
Cambridge,	Cambridge Coal Company,	do.	Drift,	12	3	15		227	5	9,971	8,981					
Draper,	Oliver Disston,	do.	Slope,	215	135	350		241	32	162,351	130,514.11			2		2
Ellangowan,	Phila. and Reading C. & I. Co.,	do.	Shaft,	485	374	859		231½	73	371,723.10	353,724.10	1	2	3		6
Elmwood,	do. do.	do.	Slope,	139	130	269		211½	19	97,406.17	93,406.17		1	2	1	4
East Bear Ridge,	do. do.	do.	Tun. drift	5	4	9		None,	4	531.09	531.09					
Girard,	do. do.	do.	Slope,	80	144	224		200½	33	72,832 17	69,832.17			2		2
Girard Mammoth,	do. do.	do.	Slope,	171	116	287		206½	33	70,236.15	67,236.15			2		2
Gilberton,	do. do.	do.	Slope,	167	152	319		235	32	93,797.13	89,797.13	1		2	1	4
Glendon,	J. C. Haydon & Co.,	do.	Slope,	268	122	390		186.8	30	118,673.07	108,020.07	1		2		3
Hammond,	Phila. and Reading C. & I. Co.,	do.	Slope,	219	159	378		228½	40	119,141.18	114,141.18			3	1	4
Honey Brook, No. 1,	Lehigh & Wilkes-Barre Coal Co.,	do.	Slope,	88	132	220		202	19	68,947	58,275	1				1
Honey Brook, No. 4,	do. do.	do.	Slope,	233	149	382		201.8	35	150,635	142,181			4		4
Honey Brook, No. 5,	do. do.	do.	Slope,	183	169	352		213.8	27	173,152	163,771					
Indian Ridge,	Phila. and Reading C. & I. Co.,	do.	Shaft,	456	324	780		201½	72	185,497.04	177,497.04		2	3	3	8
Knickerbocker,	do. do.	do.	Slope,	391	356	747		230½	49	215,565.03	205,565.03	1			2	3
Kobinoor,	do. do.	do.	Shaft,	425	320	745		233½	48	175,808.13	168,808.13			5	1	6
Kehley Run,	Thomas Coal Company,	do.	Slope,	166	136	302		231¾	29	108,888	106,730			3	2	5
Lawrence,	Lawrence & Brown,	do.	Slope,	218	160	378		209	23	96,873.01	67,165.01	3	1	4		8
Locust Mountain,	W. J. Lloyd,	do.	Slope,	27	16	43		202	4	15,016.02	13,885.09					
Mahanoy City,	Phila. and Reading C. & I. Co.,	do.	Slope,	231	145	376		229½	45	133,901.04	118,901.04	2				2
North Mahanoy,	do. do.	do.	Slope,	235	160	395		232¼	26	125,164.11	119,164.11	2	1	1	2	6
North Laurel Ridge,	S. H. Barratt,	do.	Slope,	32	34	66		135	6	18,529	17,529	1		1		2
Packer, No. 1,	Lehigh Valley Coal Company,	do.	Slope,	30	10	40		Idle,	18	3,264	150					
Packer, No. 2,	do. do.	do.	Slope,	195	199	394		149¾	10	89,131.12	80,903 01	2		3		5
Packer, No. 3,	do. do.	do.	Slope,	264	166	430		220.1	34	152,192.12	144,164.04	2		1		3
Packer, No. 4,	do. do.	do.	Slope,	307	216	523		225	41	214,097.19	203,303.19	2		5		7
Packer, No. 5,	do. do.	do.	S. shaft,	50	80	130		11.1	2	2,125.01	1,882.01			1		1
Park, No. 1,	Lantz, Lilly & Co.,	do.	Slope,	200	137	337		12¼	27	5,567.03	4,967.03					

Park, No. 2,	do. do.	do.	Slope,	305	156	461		170.8	19	95,926.17	85,926.17	4		2	1	7
Primrose,	Nevills & Co.,	do.	Slope,	89	100	189		209.9	11	52,504.14	51,501.14			3		3
St. Nicholas,	Phila. and Reading C. & I. Co.,	do.	Slope,	None,	9	9		None,	6	None,	None,					
Schuylkill,	do. do.	do.	Slope,	183	133	316		230½	23	133,327.18	127,327.18	2		3	1	6
Suffolk,	do. do.	do.	Slope,	314	193	507		236½	33	156,981.06	149,981.06	1		7		8
Shenandoah City,	do. do.	do.	D. and S.,	376	263	639		230	61	207,583.08	198,583.08	2		4	1	7
Stanton,	do. do.	do.	Slope,	138	126	264		182¾	32	53,619.02	51,619.02	1		2		3
Silver Brook,	Silver Brook Coal Company,	do.	Slope,									1				1
South Laurel Ridge,	S. H. Barratt,	do.	Slope,	35	39	74		144	6	16,408	16,108				1	1
Turkey Run,	Phila. and Reading C. & I. Co.,	do.	D. and S.,	303	182	495		237	42	149,518.15	140,518.15	1		2	1	4
Tunnel Ridge,	do. do.	do.	Slope,		12	12		Idle,	6	None,	None,					
West Shenandoah,	do. do.	do.	Slope,	196	198	394		233½	41	123,657.05	117,657.05			3	1	4
West Bear Ridge,	do. do.	do.	Slope,	15	28	43		Idle,	4							
William Penn,	William Penn Coal Company,	do.	Shaft,	326	271	600		229½	60	212,109	240,097		1	2	1	4
Grand totals,				8,540	6,611	15,151		8,211½	1,303	4,781,517.14	4,493,040.11	44	9	82	23	158

TABLE III.—LIST OF ACCIDENTS *occurring in the mines of the Fifth Inspection District, for the year ending December 31, 1885.*

Date of accident.	Name of Persons Injured Fatally.	Age.	Married or single.	No. of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accident in Brief.
Jan. 8	Michael Lynch,	30	Single,		Schuylkill,	Mahanoy City, Schuylkill co.		Killed by fall of top slate.
16	William Grindel,	21	Single,		North Mahanoy,	do. do.		Fatally burned with powder; died January 26.
Feb. 7	William Meehan,	45	Married,	3	Sheuandoah City,	Sheuandoah, do.		Killed by fall of coal in face of gangway.
13	Joseph Richards,	18	Single,		North Mahanoy,	Mahanoy City, do.		Killed by an explosion of boiler.
17	William Morgan,	45	Married,	5	Lawrence,	Mahanoy Plane, do.		Fatally injured between two cars; died March 1.
18	Daniel R. Kerwick,	23	Married,		Packer, No. 2,	Lost Creek, do.		Fatally burned by an explosion of fire-damp; died February 19.
19	Patrick Martin,	14	Single,		Elmwood,	Mahanoy City, do.		Killed; smothered in dirt hopper.
Mar. 13	Charles Holderman,	35	Married,	3	Park, No. 1,	Park Place, do.		Killed; fell down shaft while attending pump.
16	Jacob Griner,	41	Married,	6	Lawrence,	Mahanoy Plane, do.		Killed by an explosion of boiler.
20	Owen McDonald,	32	Married,	1	Connor,	Girardville, do.		Fatally injured by fall of coal; died March 28.
April 3	Robert Whitecomb,	40	Married,		Lawrence,	Mahanoy Plane, do.		Fatally burned by an explosion of fire-damp; died April 10.
4	Thomas O'Hara,	40	Married,	9	Turkey Run,	Sheuandoah, do.		Killed between cars and timber.
6	Michael Purcell,	49	Married,	10	Cuyler,	Raven Run, do.		Killed by a fall of a large area of overlying strata.
6	Benjamin Maurer,	43	Married,	2	do.	do. do.		Killed at same time.
6	Michael Herrity,	49	Married,	9	do.	do. do.		do.
6	Henry Mervine,	33	Married,	6	do.	do. do.		do.
6	Daniel Kenney,	37	Married,	5	do.	do. do.		do.
6	John Cavanagh,	23	Single,		do.	do. do.		do.
6	William Anderson,	44	Married,	6	do.	do. do.		do.
6	John Anderson,	18	Single,		do.	do. do.		do.
6	Bernard Smith,	20	Single,		do.	do. do.		do.
6	Frank McCauchlin,	22	Single,		do.	do. do.		do.
17	Patrick McCormick,	38	Married,	4	Packer, No. 4,	Lost Creek, do.		Fatally injured by coal from shot; died April 21.
May 23	Andrew Genon,	24	Single,		Ellangowan,	Maple Dale, do.		Fatally injured by explosion of powder; died May 25.
23	Charles Lewis,	13	Single,		William Penn,	Shaft, do.		Killed; fell into counter screen of breaker.
June 12	Martin Tempest,	16	Single,		Sheuandoah City,	Sheuandoah, do.		Fatally injured by fall of top slate; died June 15.
26	Robert Marsh,	28	Married,	1	Park, No. 2,	Park Place, do.		Fatally injured; sprained internally lifting car; died July 1.
29	Philip Hahn,	38	Married,	7	Lawrence,	Mahanoy Plane, do.		Killed; fell down slope chute.
July 3	Anthony McCuskey,	24	Married,		Gilberton,	Gilberton, do.		Killed; fell forty yards down slope.
6	Joseph Hoch,	40	Married,	3	Park, No. 3,	Park Place, do.		Fatally burned with powder; died July 16.
6	Henry C. Jokes,	25	Single,		do.	do. do.		Fatally burned with powder; died July 13.
12	James Crawford,	36	Single,		Silver Brook,			Killed riding up slope; fell off water car.
14	Jacob Volokenis,	28	Single,		Glendon,	Mahanoy City, do.		Fatally burned with powder; died July 15.
23	Thomas Reminder,	24	Single,		Ellangowan,	Maple Dale, do.		Killed; crushed under breaker tip and car.
Aug. 3	Charles Lynch,	24	Single,		Knickerbocker,	Yatesville, do.		Killed by fall of coal while robbing pillars.
3	George Dewwick,	25	Single,		Honey Brook, No. 1,	Audenreid, do.		do. do.

	11	John Entdnskie,	40	Married,	1	Mahanoy City,	Mahanoy City,	do.			Fatally injured by fall of coal; died August 29.
	13	Albert Spotts,	31	Single,		North Mahanoy,	do.	do.			Fatally injured by fall of coal; died August 14.
	29	Joseph McDermont,	28	Single,		Stanton,	Maizeville,	do.			Killed; crushed between cage and sill on slope.
Sept.	3	Alexander McLeod,	38	Married,	3	Packer, No. 3,	Brownsville,	do.			Fatally burned by explosion of fire-damp; died September 14.
	3	Martin Ginnis,	28	Single,		do.	do.	do.			Fatally burned by explosion of fire-damp; died September 8.
	3	John Lord,	45	Married,	2	Packer, No. 4,	Lost Creek,	do.			Killed by fall of coal at face of breast.
	4	John Craven,	45	Single,		Mahanoy City,	Mahanoy City,	do.			Killed by fall of coal in cross-heading.
	4	Patrick McLauchlin,	20	Single,		Packer, No. 2,	Lost Creek,	do.			Killed; run over by mine car.
	14	Muir J. Bainbridge,	18	Single,		Indian Ridge,	Shenandoah,	do.			Killed; run over by railroad cars under breaker.
	14	John Seagar,	19	Single,		do.	do.	do.			do. do
	30	Nicholas Wildschock,	25	Married,		Ellangowan,	Maple Dale,	do.	Sept.	30	Killed attempting to couple dumper while in motion.
Oct.	9	James Bartlett,	32	Married,	1	North Laurel Ridge,	Gilberton,	do.	Oct.	10	Killed by fall of coal while drilling a hole.
	30	Patrick O'Donnoll,	21	Single,		Buck Mountain,	Mahanoy City,	do.		31	Killed by fall of top slate in gangway.
Nov.	7	John Morning,	55	Married,		Suffolk,	St. Nicholas,	do.	Nov.	7	Killed by fall of coal at face of breast.
	17	George Betteler,	24	Single,		Boston Run,	do.	do.		19	Killed by fall of coal at battery.
Dec.	10	Paul Wiseman,	46	Married,	6	Schuylkill,	Mahanoy City,	do.	Dec.	11	Killed by fall of coal at face of gangway.
	18	James Charles,	22	Single,		Park, No. 3, Slope,	Park Place.	do.		19	Killed in attempting to board moving cars on slope.

TABLE No. IV.—*List of accidents occurring in the mines of the Fifth Inspection District, for the year ending December 31, 1885.*

Date of accident.	Names of Persons Injured Non-fatally.	Age.	Married or single.	No. of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accident in Brief.
Jan. 5	James Jopp,				West Shenandoah,	Shenandoah, Schuylkill co.,		Ribs broken; piece of rock fell on him.
6	Alfred Hazeldine,				Kehley Run,	Shenandoah, do.		Face and hands scalded by boiler explosion.
8	Henry Bickleman,				Park, No. 2,	Park Place, do.		Back injured; piece of timber fell on him.
9	Patrick Brennan,				Primrose,	Mahanoy City, do.		Head cut by piece of coal from shot.
10	Peter Bradbury,				Glendon,	Mahanoy City, do.		Back bruised; fall of top slate.
14	Charles McBride,				Honey Brook, No. 4,	Audenreid, do.		Leg broken by rush of coal in breast.
15	Martin Loftus,				North Mahanoy,	Mahanoy City, do.		Arm broken; caught by pumping machinery.
24	Frank King,				Kohinoor,	Shenandoah, do.		Arm broken; piece of coal fell on him.
Feb. 3	James Bradbury,				Suffolk,	St. Nicholas, do.		Head and hands cut while spragging car.
6	Andrew Haggerty,				Lawrence,	Mahanoy Plane, do.		Jaw broken while starting battery.
12	Anthony Srosky,				Packer, No. 4,	Lost Creek, do.		Spine and hips injured; fell in manway.
13	James Lord,				North Mahanoy,	Mahanoy City, do.		Face scalded and collar-bone broken by boiler explosion.
16	John Boyer,				Bear Run,	St. Nicholas, do.		Collar-bone broken; coal fell on him.
16	James McDonald,				South Laurel Ridge,	Gilberton, do.		Leg broken; caught by clamp on screen shaft.
18	James Lafferty,				Packer, No. 2,	Lost Creek, do.		Burned severely by explosion of fire-damp.
21	Thomas Carrol,				West Shenandoah,	Shenandoah, do.		Arm broken; struck by mule.
23	George Jones,				West Shenandoah,	Shenandoah, do.		Leg and head injured by fall of top slate.
24	Peter Collins,				Hammond;	Girardville, do.		Small bone of arm broken; fell off breast chute.
24	John Hamburger,				Suffolk,	St. Nicholas, do.		Ankle fractured; wagon ran over his foot.
24	Charles Rudcaw,				Suffolk,	St. Nicholas, do.		Face and breast bruised; run over by empty car.
24	Ham. Rusk,				Girard Mammoth,	Raven Run, do.		Side squeezed; jammed by mine car.
25	William Delowney,				Shenandoah City,	Shenandoah, do.		Arm broken; riding up slope he struck drum.
25	William Williams,				Draper,	Gilberton, do.		Ribs broken and face cut; shot fired about him.
26	James Donohue,				Suffolk,	St. Nicholas, do.		Leg broken by fall of coal.
26	William Corcoran,				Hammond,	Girardville, do.		Injured severely by falling on screen; (out of place.)
March 4	Peter Shearan,				Buck Mountain,	Mahanoy City, do.		Breast injured; struck by a piece of coal.
4	Isaac Evans,				Stanton,	Maizeville, do.		Ankle-bone splintered; jumping off car.
10	Patrick Fenton,				William Penr,	Shaft, do.		Face and hands burned by explosion of fire-damp.
10	Ralph Baird,				Kehley Run,	Shenandoah, do.		Eyes injured by premature explosion of blast.
10	William Hennesy,				Knickerbocker,	Yatesville, do.		Head and jaw injured; caught between mine cars.
10	Luke Keenahan,				Indian Ridge,	Shenandoah, do.		Arm broken; fell into coal chute of breaker.
10	Patrick Whalen,				Packer, No. 2,	Lost Creek, do.		Face and hands burned by explosion of fire-damp.
10	John Whalen,				Packer, No. 2,	Lost Creek, do.		Face and hands burned by explosion of fire-damp.
18	Thomas Quinn,				Suffolk,	St. Nicholas, do.		Back injured by fall of top slate.
April 3	Patrick Burke,				Schuylkill,	Mahanoy City, do.		Small bone of arm broken; fell on platform.
3	William Monaghan,				Lawrence,	Mahanoy Plane, do.		Face and hands burned by explosion of fire-damp.
6	Edward Murphy,				Buck Mountain,	Mahanoy City, do.		Head injured; caught in cog of breaker rolls.
7	James Jopp,				West Shenandoah,	Shenandoah, do.		Leg broken; caught by rock in chute.

	8	James O'Brien,			Turkey Run,	Shenandoah,	do.		Wrist dislocated; jammed between car and schute.
	15	James Banman,			Primrose,	Mahanoy City,	do.		Slightly burned by explosion of fire-damp.
	15	Patrick Brennan,			Primrose,	Mahanoy City,	do.		Slightly burned by explosion of fire-damp.
	17	Anthony Combs,			Bear Run,	St. Nicholas,	do.		Leg injured; struck by coal from shot.
	17	James Todd,			Girard,	Girardville,	do.		Finger cut off between gunboat and spreader.
	18	Simon Youcivitz,			William Penn,	Shaft,	do.		Body bruised; fell off breaker trestling.
	22	Richard Sampson,			Packer, No. 5,	Los Creek,	do.		Wrist fractured; fell 50 feet down slope.
	23	William Nicols,			Kehley Run,	Shenandoah,	do.		Leg broken; fall of coal in breast.
	25	George Knott,			Kohinoor,	Shenandoah,	do.		Leg bruised; caught in a rush of coal.
	28	Michael Kollin,			Buck Mountain,	Mahanoy City,	do.		Leg bruised; run over by dumper on dirt bank.
May	15	John Cole,			Suffolk,	St. Nicholas,	do.		Spine injured by fall of coal.
	21	Samuel Rudge,			Schuylkill,	Mahanoy City,	do.		Body bruised by fall of top slate.
	23	William Meyers,			Kehley Run,	Shenandoah,	do.		Leg broken while starting battery; was amputated.
	27	Benjamin Williams,			Elmwood,	Mahanoy City,	do.		Arm fractured; struck with hammer by his "butty."
June	5	Michael Maley,			Girard Mammoth,	Raven Run,	do.		Ribs fractured by premature explosion of shot.
	9	Michael Haley,			Conner,	Girardville,	do.		Bone of hand broken; fell off plank in breaker.
	11	Charles Docherty,			Packer, No. 4,	Lost Creek,	do.		Leg bruised; fall of coal.
	12	John Fitzeabbage,			Packer, No. 4,	Lost Creek,	do.		Leg broken; piece of coal fell on him.
	16	George Shuck,			Elmwood,	Mahanoy City,	do.		Leg severely crushed between mine cars.
	17	Joseph Conn,			Lawrence,	Mahanoy Plane,	do.		Leg bruised by fall of rock.
	29	Joseph Kelly,			Lawrence,	Mahanoy Plane,	do.		Leg and arm broken; fell down sinking slope.
July	3	Daniel Roarty,			Turkey Run,	Shenandoah,	do.		Leg crushed by fall of coal.
	13	George Hopkins,			Conner,	Girardville,	do.		Finger lacerated; car ran over it.
	14	Miles Iringham,			Gilberton,	Gilberton,	do.		Leg broken by fall of coal.
	16	George Ridley,			Hammond,	Girardville,	do.		Back bruised by fall of coal.
	23	George Schultz,			Honey Brook, No. 4,	Audenreid,	do.		Leg broken; caught between mine cars.
	24	John McGee,			Honey Brook, No. 4,	Audenreid,	do.		Injured internally; caught between cars and chute.
Aug.	3	David James,			Draper,	Gilberton,	do.		Severely bruised; fell down breast manway.
	6	Owen Purcell,			Park, No. 3, Slope,	Park Place,	do.		Shoulder dislocated; fell out of cross-hole.
	20	Henry Lord,			North Mahanoy,	Mahanoy City,	do.		Hip dislocated; caught between mine cars.
	22	James Igo,			Ellangowan,	Maple Dale,	do.		Hip injured by fall of rock.
	26	Patrick Reddie,			Hammond,	Girardville,	do.		Body bruised; jammed between mine cars.
	26	James Linton,			Shenandoah City,	Shenandoah,	do.		Arm broken; slipped and fell down chute.
	26	Joseph Hardick,			Indian Ridge,	Shenandoah,	do.		Leg broken; jammed between mine cars.
Sept.	3	Anthony Gimes,			Packer, No. 3,	Brownsville,	do.		Severely burned by explosion of fire-damp.
	9	Michael Murphy,			Schuylkill,	Mahanoy City,	do.		Leg broken by fall of coal.
	14	Frank Henry,			Gilberton,	Gilberton,	do.		Leg broken; struck by rope on outside coal plane.
	21	Lawrence Crotosky,	42		Turkey Run,	Shenandoah,	do.		Leg and breast injured by fall of coal.
	28	Thomas Frost,	19		Ellangowan,	Maple Dale,	do.		Arm broken; caught between timber and car.
	29	James Handlin,	49		Elmwood,	Mahanoy City,	do.		Rib fractured; struck by pin while unloading car.
Oct.	6	Anthony Odlum,			Suffolk,	St. Nicholas,	do.		Side bruised; caught between mine cars.
	6	John Miller,	23		Knickerbocker,	Yatesville,	do.		Small bone of leg broken by fall of coal.
	15	James Price,	24		Glendon,	Mahanoy City,	do.		Body bruised by mine cars on slope track.
	15	John Lucid,	42		Connor,	Girardville,	do.		Head and body hurt by fall of coal.
	17	William Irwin,	31		North Laurel Ridge,	Gilberton,	do.	Oct. 18	Leg broken and skull fractured; battery rushed on him
	19	John Sullivan,	18		Stanton,	Malzeville,	do.		Body bruised between mine cars and timber.
	30	William Murphy,	30		Gilberton,	Gilberton,	do.		Arm broken; prop fell on him.
	31	Robert Fishburn,			Shenandoah City,	Shenandoah,	do.		Hand broken; struck himself while driving wedge.
Nov.	2	Thomas Scanlan,	50		Indian Ridge,	Shenandoah,	do.	Nov. 6	Leg broken by a fall of coal
	3	John Breadlavage,	26		Shenandoah City,	Shenandoah,	do.	6	Back, arm, and foot injured by fall of coal.
	6	Michael Kline,	18		Kohinoor,	Shenandoah,	do.		Body hurt; squeezed between mine cars.
	11	George Deiter,	16		Kohinoor,	Shenandoah,	do.		Leg crushed; lever of chute gate fell on him.
	14	John Grograne,	10		Kohinoor,	Shenandoah,	do.		Shoulder-bone broken; caught between mine cars.

TABLE No. IV—*Continued.*

Date of accident.	Names of Persons Injured Non-Fatally.	Age.	Married or single.	No. of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accide t in Brief.
Nov. 23	James Phillips,	..	.....	..	Kohinoor,	Shenandoah, Schuylkill co.,	.....	Arm broken; caught between car and prop.
17	Frank Bosch,	18	.....	..	Shenandoah City,	Shenandoah, do.	.....	Ankle dislocated; jumping off car.
12	Patrick Kelly,	28	.....	..	Girard,	Girardville, do.	Nov. 13	Leg fractured; refused to obey alarm of fire given.
28	John Peel,	20	.....	..	Packer, No. 4,	Lost Creek, do.	.....	Forehead cut severely; kicked by mule.
28	Clarence Brennon,	26	.....	..	Park No. 3, Slope,	Park Place, do.	.....	Thigh-bone broken by a fall of coal.
28	Robert Shuman,	26	.....	..	William Penn,	Shaft, do.	Nov. 29	Back and head injured by a fall of coal.
Dec. 3	James Monaghan,	..	.....	..	Packer, No. 4,	Lost Creek, do.	Dec. 4	Hands and face burned by explosion of fire-damp.
4	Joseph Rebovish,	28	.....	..	Indian Ridge,	Shenandoah, do.	.....	Shoulder dislocated; dirt dumper fell on him.
5	William Buchannan,	18	.....	..	Ellangowan,	Maple Dale, do.	.....	Leg hurt; splinter from rail ran in his leg.
10	Andrew Christian,	22	.....	..	Schuylkill,	Mahanoy City, do.	Dec. 11	Ankle broken by a fall of coal.
17	Anthony McManaman,	..	.....	..	Indian Ridge,	Shenandoah, do.	.....	Leg broken; mule fell on him.
22	Andrew Gregor,	24	.....	..	Honey Br'k, No. 1 Strip,	Audenreid, do.	Dec. 28	Foot severely crushed; piece of coal rolled on him.
22	Thomas Miners,	28	.....	..	Indian Ridge,	Shenandoah, do.	Dec. 24	Collar-bone and ribs broken between car and timber.

TABLE V.—*Showing the grand total of employés, horses, mules, engines, pumps, boilers, and powder employed, tons of coal mined and shipped, fatal and non-fatal accidents, &c., in the Fifth Mine District, for the year ending December 31, 1885.*

NAME OF COUNTIES AND PARTS OF COUNTIES IN THE DISTRICT.	Total number of men employed.	Total number of boys employed.	Total number of horses and mules employed.	Total number of engines and pumps employed.	Total number of boilers employed.	Total number of kegs of powder consumed.	Total number of tons of coal produced.	Total number of tons of coal shipped.	Total number of fatal accidents.	Total number of non-fatal accidents.	Total number of times air measurements were taken.
.....	10,576	4,575	1,303	437	880	110,590	4,781,517.14	4,493,040.11	53	105	360

SIXTH DISTRICT.

OFFICE OF INSPECTOR OF MINES,
ASHLAND, *March 17, 1886.*

Honorable J. SIMPSON AFRICA, *Secretary of Internal Affairs of the Commonwealth of Pennsylvania:*

SIR: In compliance with an act of Assembly entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith," approved June 30, 1885, I herewith have the honor of submitting this my annual report, which contains a list of the persons killed and injured, together with the number of tons of coal mined and shipped to market, number of kegs of powder used, number of days worked, number of persons employed, number of mules and horses, number of engines and pumps, and number of steam boilers, in and about the collieries in the district during the year 1885, and such other information as may be deemed necessary to those employed or interested in the mining and production of coal.

Total number of tons of coal shipped to market,	3, 961, 206. 17
Sold and consumed at collieries,	244, 214. 00
Total production for year 1885,	4, 205. 420. 17
Total production for year 1884,	4, 535, 051. 13
Decrease under that of year 1884,	329, 630. 16
Number of employés inside,	8, 511
Number of employés outside,	5, 691
Total number of employés in district,	14, 202
Number of kegs of powder used during year,	104, 250
Number of days worked during year,	212. 9
Number of mules and horses,	1, 673
Number of steam boilers,	890
Number of engines and pumps,	
Number of fatal casualties,	45
Number of non-fatal casualties,	136

Very respectfully,

JAMES RYAN,
Inspector of Coal Mines.

Recapitulation of Fatal Casualties.

Falls of coal and roof,	17
Mine cars and machinery,	11
Suffocated by rush of mud,	4
Falling down manway,	2
Premature blast,	1
Explosion of powder,	1
Miscellaneous inside,	5
Miscellaneous outside,	4
Total,	45

Recapitulation of Non-Fatal Casualties.

Falls of coal and roof,	47
Mine cars and machinery,	35
Explosion of carbureted hydrogen gas,	13
Premature blasts,	10
Explosion of powder,	3
Miscellaneous inside,	16
Miscellaneous outside,	12
Total,	136

IMPROVEMENTS MADE BY THE PHILADELPHIA AND READING COAL AND IRON COMPANY IN AND ABOUT THEIR COLLIERIES IN THE SHAMOKIN DISTRICT DURING 1885.

Keystone Colliery.

The air slope, seven hundred and twenty-six feet long, was remodeled and retimbered throughout, and fitted with substantial steps from top to bottom. A new frame blacksmith shop, 41′ 6″×31′, with sheet-iron roof, was erected and equipped. A new frame stable was also erected. A new line of one thousand five hundred and sixty feet of 4″-hautboy pipe was laid from the Potts colliery pipe line to that of this colliery from their large reservoir, thus insuring an abundant supply of fresh water.

Merriam Colliery.

A new, self-acting plane, 14′ collar, 19′ spread, 8′ to 12′ high, and 358′ long from knuckle to landing, was driven in the East Mammoth gangway of the Long Tunnel workings; this is equipped with a drum 7′ diameter, and all other necessary appliances for operating it. A new tunnel, eighty feet long, was also driven from the south dip to the south dip of the South East Tunnel workings. Sixteen new standard boilers were erected, each 34″ diameter, 30′ long, with all fixtures complete, including twenty-eight Wootten patent blowers for burning culm, the brick walls incasing them contain one hundred and five thousand bricks.

There were also erected six standard sheet-iron boiler-houses, each 57′

10″ long and 16′ 8″ wide, and five boiler iron stacks, each 34″ diameter and 30′ high. In order to mechanically convey the fuel from the breaker to the boiler-house, two automatic cast-iron fuel telegraphs were erected, the one one hundred and sixty-four feet and the other one hundred and twelve feet long, the former being operated by three hundred and thirty-six feet, and the latter by two hundred and thirty-two feet of endless chain and scrapers.

Monitor Colliery.

A new air slope, 226′ long, 13′ wide, and 8′ high, was driven in the Mammoth vein from the upper east gangway connecting with a new air-shaft, 31′ deep and 81 square feet area sunk from the surface. This has been supplied with a new 18′-Guibal fan, with all modern improvements and fixtures complete, and operated by a new fan engine of 16″ cylinder, 18″ stroke. A new Standard steam pump, 9″ water cylinder, 38″ stroke, with seven hundred and forty-eight feet of 6″-cast-iron column pipe, has been erected at the foot of the main inside slope, and another pump of the same dimensions with one hundred and fifty-seven feet of 8″ and two hundred and fifty-seven feet of 7″-cast-iron column pipe has been erected at the foot of the upper east inside slope.

The breaker structure has been thoroughly repaired and otherwise improved; the screen rooms have been remodeled and supplied with complete outfits of the new Standard cast-iron slate-picking tables and telegraphs, thereby enabling superior preparation of the coal.

Eight new Standard boilers were erected, each 34″ diameter, 30′ long, with all fixtures complete, including sixteen Wootten patent blowers for burning culm. The brick walls surrounding them contain fifty-four thousand bricks. Two Standard sheet-iron boiler-houses, each 57′ 10″ long and 16′ 8″ wide, were also erected together with two boiler-iron stacks, each 30′ high 34″ diameter. A new boiler-iron heater, 40′ long and 34″ diameter, has also been added to these boilers. A No. 4 Cameron steam pump and a Quirin steam pump of 10″-water cylinder and 16″ stroke, together with a new 4,000-gallon tank, and a line of seven hundred and sixteen feet of 2½″-water pipes have been added to the water-supply. A cribbed and filled embankment, one hundred and eighty-nine feet long and thirty feet high, has been constructed to obtain a better alignment of the road from the slope landing to the breaker tip.

Locust Spring Colliery.

Breast No. 61 of the lower west No. 8 vein workings has been driven one thousand five hundred and seventy-five feet through to the surface, and connected to the lower and upper counter gangways, thus making a convenient, safe, and easy second outlet from all the workings west of the hoisting slope and perfecting their ventilation.

A new tunnel, fifteen feet long, has been driven from the lower east Mammoth gangway, at breast No. 40 to the Skidmore gangway.

A new Standard steam pump, 9″ water cylinder, 38″ stroke, with one thousand feet of 8″ cast-iron column pipe, has been placed at the foot of the slope.

Eight new Standard boilers, each 34″ diameter, 30′ long, were erected, (four of them replacing the old ones injured by the explosion of December, 1884,) with all fixtures complete, including sixteen Wootten patent blowers for burning culm.

Three Standard sheet-iron boiler-houses, each 57′ 10″ long, 16′ 8″ wide, and two boiler-iron stacks, each 30′ high and 34″ diameter, were also put up. A frame supply house for purifying materials was also constructed, with sheet-iron roof.

Locust Gap Colliery.

The large trestle at the breaker tip, three hundred and three feet long and seventy feet high was thoroughly renewed, and is now in first-class condition.

Reliance Colliery.

A new Standard steam pump, 8″ water cylinder, 32″ stroke, has been erected to supply the jigs with water, and a set of steel rolls has been put into the breaker.

Mt. Carmel Shaft Colliery.

A new self-acting plane, two hundred and eighty-five feet long from knuckle to landing, was driven in the South West working, and equipped with a seven foot drum, and all other necessary appliances for operating it. A new Standard steam pump, 9″ water cylinder, 38″ stroke, with three hundred and seventy nine feet of 5″ cast-iron column pipe, has been erected at the foot of the shaft.

The breaker has been supplied with a new automatic dirt conveyor, seventy-six feet long, with fifty-four 16″ scrapers. A new frame office, 10′ × 12′, and a new frame wash house, 12′×16′, for the miners, were also erected.

Peerless Colliery.

The old landing at the head of the north dip slope in the No. XI vein has been abandoned, and a new one made at the level of the water level gangway. This necessitated the making of an open cut, one hundred and forty-five feet long, fifty-eight feet wide, and twenty feet deep, with a backswitch tunnel, in the top rock, sixty feet long, twenty feet wide, and seven feet high, all of which has been completed, and is now in first-class working order.

The airway in the No. X vein has been enlarged and retimbered, thus effecting improved and reliable ventilation. A new standard sheet-iron boiler-house, 54′ 6″ × 19′ 7″, was erected during the year.

Henry Clay Colliery.

Two Standard steam pumps, each 9″ water cylinder, 38″ stroke, with three hundred and fifty-eight feet of 6″, 8″, and 10″ cast-iron column

pipes were erected at the foot of the hoisting shaft; as were also two exactly similar pumps at the foot of the No. 1 inside slope, with three hundred and five feet of 8″ and 10″ cast-iron column, and three hundred and fifty feet of 4″ cast-iron steam pipes.

Burnside Colliery.

A new frame fan engine-house was erected.

Bear Valley Colliery.

Four new tunnels were driven in this colliery during the year, viz: One, 10′×10′ and forty-six feet long from the West No. X gangway to the West Mammoth gangway; two, 10′×10′, and nineteen feet long each, from the west middle split gangway to the top split vein; and one, 10′×10,′ and twenty-five feet long from the west middle split gangway to the bottom split gangway.

A new trial slope has been sunk from the surface into the basin of the Mammoth vein, between the east side water level and shaft level workings. This slope, which is four hundred and seventy-four feet long, and has a tunnel thirty-three feet long at its foot, is regularly timbered throughout, and has good stout ladders, firmly fastened from top to bottom; it is also valuable as a convenient and safe additional outlet, and assists in ventilating the workings.

To sink this slope, there has been erected a hoisting engine of twelve inch cylinder and twenty-four inch stroke, four feet drum with brake, and seven foot fly-wheel attached; also a No. 3 flue boiler with iron stack, and a frame hoisting engine-house, nineteen feet long, thirteen feet wide, together with one No. 3, and one No. 5 Blake steam-pumps, with two hundred feet of two inch column pipe to drain the slope. East of the breaker there has been erected a new double track dirt plane, three hundred and forty feet long, with trestle one hundred feet long, thirty-six feet high, and twenty feet wide, with large dirt and rock bins at both top and bottom, so arranged as to unload the dirt and rock automatically.

Two new reservoir dams have been constructed, the one for fresh water supply has a capacity of about five million gallons, and the other for water supply to wash coal at the lip screens, has a capacity of about one hundred thousand gallons.

A new frame three thousand gallon tank, and a new frame pump-house 30′×12′ with sheet-iron roof were erected, also, a frame sheet-iron roofed locomotive-house, 16′×12′.

North Franklin No. 2, Colliery.

A tunnel, 10′×10′ and 42′ long, was driven from the No. VII to the No. VI vein. The boilers not heretofore burning culm were remodeled to use such fuel, and supplied with six additional Wootten patent blowers. Aside from the improvements above enumerated, the usual repairs were main-

tained at all the collieries, and the properties kept up to the established standard.

East.

A new addition to the breaker, fifty-five long, thirty-three feet wide, and forty feet high, with screens, cast-iron telegraphs, tables, chutes, and slate boxes has been built.

North Ashland Colliery.

The airway at slope has been retimbered from the water to drift surface. A new airway, one hundred and four yards long, has been driven from the lower left gangway, Buck Mountain vein, to the water level gangway. A new sump gangway, forty feet long, seven feet wide, and twelve feet high, has been driven. A standard, 9×38, Philadelphia and Reading Coal and Iron Company's pump, has been placed in position in the rock pump room, east of foot of slope. A new fan, fifteen feet in diameter, with vertical engine, eighteen inch stroke and twelve inch cylinder, has been built at the head of airway near slope, taking the place of the one burned down. A head frame gunboat dump and small breaker are being built at head of slope.

Preston No. 3.

Pump slope is being retimbered from top to bottom.

Preston No. 2.

A new pipe line three thousand four hundred and eighty feet long, has been laid from the Girard estate pipe line to the colliery reservoir.

Short Mountain and Lykens Valley Colliery.

Sunk No. 4 slope one hundred and twenty-three yards, driven fourteen and one half yards of Y at bottom of same. Made twenty-eight yards of engine room. Put in two Allison & Bannan steam pumps. Drove seventy and one third yards of cross-cut tunnel in No. 1, west counter. Put in place twelve new boilers (additional) each 34″×30′ long; also, two boilers 36″×25′ feet long, and a Blake pump at coal yard for fresh water supply for colliery boilers. Put in place two boilers at machine shop, saw-mill engine, and a fifteen-foot fan to ventilate the old Bear Valley tunnel workings.

Williamstown Colliery.

Made room in rock for eight boilers for No. 4 slope, 60×45×9′ high, for furnishing steam for hoisting and pumping water. Driven a cross-cut tunnel fifty-three and two thirds yards long, from No. 3 slope counter Big vein to White's vein. Drove a cross-cut tunnel nineteen yards long, from No. 10, to dirt vein in Summit slope, and another cross-cut tunnel nineteen and one third yards long, from No. 9 to No. 8 vein, in Bear Valley slope. Built three blocks of houses, two twenty-eight feet square, seventeen feet high for two families each, and one block 26′×52′, 17′ high for four families. Dug eight hundred and fifty yards of trench, and laid pipe from Greenfield's, to pump fresh water for boilers at colliery.

Cameron.

Drove three tunnels, one from No. 9 to No. 6 vein, and one from No. 10 to No. 13 vein, No. 9 slope level, another from No. 9 to No. 10 vein in east inside slope. Put up two fans to ventilate the workings.

Luke Fidler.

Drove a tunnel from No. 9 to No. 6 vein, and driving a tunnel from No. 9 to No. 10 vein. Put up a new fan to ventilate the workings. Put in place two new boilers, and built house for same.

Hickory Ridge Colliery.

Have driven a tunnel from No. 8 to Buck Mountain, north dip, and driving one from same vein to same vein, south dip. The colliery is undergoing a general change for the better.

Neilson Shaft.

Put in place six new boilers 34″×30′ long; sinking shaft.

Mt. Carmel Colliery.

Built an addition to breaker, putting in machinery for re-breaking broken and egg coal, and new slate picking tables complete. Built a fresh water dam for supplying colliery boilers.

Enterprise Colliery.

Sunk a new slope on the north dip of the No. 8 vein, and drove a water level tunnel from bottom of same. Put four boilers and engine in place, and built house for same. Put up a twelve-foot fan to ventilate the workings.

Logan.

Put in place four new boilers, one new stack for same; also, a new twelve-foot fan to ventilate the Buck Mountain vein, north dip, workings. Provided a locomotive outside to haul away the coal dirt from breaker.

Centralia Colliery.

Sunk a new lift of slope about nine hundred feet deep.

Hazle Dell Colliery.

Put in place two new boilers to furnish steam to hoisting slope engine and fan.

ACCIDENTS.

Miscellaneous Outside.

ACCIDENT No. 1.—Enoch Sandusky, slate-picker, aged fourteen years, suffocated by steam at Luke Fidler colliery, May 9, 1885. According to evidence, it was a habit of the slate-picker boys, during dinner hour, after they ate their dinners, to get on an ash car (that was used to haul the ashes from breaker boiler in or out on ash bank) and run it into boiler-house. At time of accident deceased, with other boys, were running it into boiler-

house; it jumped the track and struck against the front of one of the boilers, displacing the man-hole door, causing the steam to escape in such a volume as to suffocate deceased before he was rescued from the danger to which he was exposed.

Accident No. 2.—Martin Lavell, slate-picker, aged fourteen years, fatally injured by being crushed between big railroad car wheel and rail at Centralia colliery, May 11, 1885. He died in about eight hours after accident. Deceased was employed picking slate out of coal on top of big railroad cars while standing on railroad, after being loaded at breaker. While thus engaged picking the slate on top of loaded cars out near end of railroad track, he saw a trip of loaded cars coming toward him; he got off and ran to meet the trip of five cars: in his attempts to get on he fell with his both legs across the rail in front of the wheel of first car; he was dragged about thirty feet; the flesh on one leg was lacerated nearly from his hip down to his knee. The other leg was broken between knee and hip. He died from the injuries received at the time above mentioned.

Accident No. 3.—Joseph Lester, engineer, aged fifty one years, killed on July 4, 1885, by the explosion of a steam boiler at Williamstown colliery. He left a wife and five children. According to the evidence given at inquest, the accident occurred about nine o'clock in the morning, and the cause assigned for it was an insufficiency of water in boiler, at the same time running or pumping in cold water. Cland Como (boiler-maker) testified to having examined the boiler in about nine hours after accident, and could find neither a crack nor flaw in the iron. He also stated the boiler was made of the best quality of iron, and was good for from twelve to fifteen years. William M. Jones, night engineer, testified that the boiler was full of water up to the top gauge when he left at seven o'clock in the morning. Deceased, when found after accident, was in front of where the boiler was before the accident, in a sitting position, his face toward south and against a little closet. There was a wound on the back of his head.

Accident No. 4.—Joseph Dunlap, Jr., slate-picker, aged twelve years, fatally injured on big railroad near Short Mountain and Lykens Valley Colliery breaker, July 29, 1885, by being run over by railroad cars. He died in about three hours after accident. Deceased, at time of accident, while running along railroad near breaker on his way home from work in the evening, was struck by the front wheel of first car of an empty train of cars that were being pushed toward breaker by a locomotive, knocked down and run over, sustaining injuries from which he died shortly after accident.

Miscellaneous Inside.

Accident No. 1.—Thomas Laughlin, miner, aged fifty years, fatally injured by being thrown down Garfield Colliery slope, January 5, 1885. He died in about two and one-half hours after receiving injuries, leaving a wife and five children. Deceased was employed driving the chutes and head-

ings in the west counter gangway. In crossing the slope under the rope at water level, on his way going home in the evening, he took hold of the rope. While crossing, the engineer started to hoist, raising the rope up near slope collars, throwing deceased down the slope, causing such injuries to him that he died at the time above stated.

ACCIDENT No. 2.—John Doyle, miner, aged forty seven years, fatally injured January 10, 1885, by falling down cross-hole in Logan colliery, died on January 26, 1885, leaving a wife and four children. Deceased was employed driving the air course, or monkey gangway, in the east side, north dip workings, No. 3 slope. While in the act of running away from a blast, he slipped and fell down a cross-hole to gangway, receiving injuries which caused his death in sixteen days after the accident.

ACCIDENT No. 3.—Charles James, miner, aged thirty-three years, fatally injured in Garfield colliery by an explosion of the contents of an empty powder keg, with about two quarts of water in it. (that was used to thaw dualin powder,) on blacksmith's fire, January 29, 1885. He died in about six and a half hours after accident, leaving a wife and one child. Deceased, with four other men, were employed driving a tunnel. After going down to work at seven o'clock in the morning, he got an empty powder keg with about two quarts of water in it. He put the keg on the fire to warm the water to thaw some dualin powder preparatory to firing a blast. It had not been on the fire more than five or six minutes when the explosion took place with the above result. The water which was in the keg at time of explosion was used by the eleven o'clock shift in thawing dualin; therefore, it must have been heavily charged or mixed with the explosive substance of the dualin thus thawed.

ACCIDENT No. 4.—James Narrance, miner, aged fifty-three years, killed in Bear Valley shaft colliery by a rush of coal and dirt, while sinking battery prop hole, on June 17, 1885. He left a wife and two children. Deceased and another miner, named William Heath, were employed driving chutes and headings in the No. 10 vein, west gangway. On morning of accident they discovered the battery of breast No. 23 giving away, caused by the bottom slate heaving. At time of accident deceased was sinking fresh prop holes preparatory to putting in a new or relief battery, when the old battery, together with a large mass of loose coal and dirt, came rushing down, covering and suffocating him before he was extricated therefrom.

ACCIDENT No. 5.—Charles Shultz, miner, aged thirty-one years, killed in Bear Valley shaft colliery by a rush of coal and dirt, October 31, 1885. He left a wife and two children. At time of accident deceased was at the third cross-heading in manway throwing coal up to start some loose coal and dirt that was blocked in the manway between the third and fourth cross-headings. While thus engaged, the loose coal and dirt started down the manway, caught and suffocated him before he was rescued therefrom.

Premature Blast.

Accident No. 1.—John Rigotti, miner, aged forty years, fatally injured by a premature blast in lower west cross-cut tunnel in Pennsylvania colliery, March 28, 1885. He died in about two days and a half after the accident, leaving a wife and five children in Austria. At time of accident deceased and two other men, named John Ferrari and Peter Flinn, were employed driving a tunnel from No. 9 to No. 8 vein, on the No. 1 slope level, west side, about 11.30 o'clock. A hole that they had drilled and tamped missed fire three times; after which deceased took and put an iron needle in it. While in the act of twisting the needle in the hole the blast exploded, some of the pieces striking and injuring him to such an extent as to cause his death at the time above stated. This is one of the many accidents that could have been averted, had that care and prudence been exercised, which should have been on such occasion, by using the copper needle that was provided for such use, instead of an iron one.

Explosion of Powder.

Accident No. 1.—John Glinsku, miner, aged fifty-three years. Died on June 22 from injuries received on the 15th, by the explosion of a keg of powder in Excelsior colliery. He left a wife and four children. On day of accident, about 4.30 o'clock P. M., deceased and his butty, Martin Kutkasii, were at the box where they kept their supplies: deceased, after putting fresh cotton in his lamp, was in the act of throwing away the old cotton, when sparks from it ignited a full keg of powder, inflicting injuries of such a nature as to cause his death in seven days after the accident.

Falling down Manway.

Accident No. 1.—James Kilmurray, miner, aged thirty-four years, killed by falling down manway in Hickory Ridge colliery, May 22, 1885. He left a wife and five step-children. Deceased and his brother John were working in breast No. 22, No. 9 vein, east gangway, old slope level. Between two and three o'clock, P. M., while going down inside manway on their way home, deceased who was first, slipped and fell; when found by his brother at bottom of manway, life was extinct. Vein is dipping on an angle of about seventy-five degrees.

Accident No. 2.—John Meiskie, miner, aged twenty-seven years, fatally injured by falling down manway at Hickory Ridge colliery, June 12, 1885. He died shortly after accident: single man. Deceased, and another man John Groblinski, were at the time of accident working in a breast in the same vein, same gangway, and same slope as the Kilmurrays. After going in to work in the morning, they drilled and tamped two holes, one missed fire: after the smoke had cleared away, Groblinski dressed off the loose coal after blast, and put a fresh squib in the hole that missed fire, and went down to the cross-heading where Meiskie was sitting. In a couple of minutes after the blast, deceased went up to face of breast, and across to out-

side of manway where he slipped, and fell down manway a distance of about sixty yards, receiving injuries which caused his death in about ten hours after accident.

Falls of Coal and Roof.

ACCIDENT No. 1.—James Manning, miner, aged forty-two years, killed by a fall of top coal in Mt. Carmel shaft, February 24, 1885. He left two children to survive him. At time of accident deceased was working in a breast with another miner named Henry Pugh. The latter was loading a car; deceased was standing on top of the bottom coal starting to drill a hole in the top coal; he had only given the coal a couple of punches with the drill starting the hole, when the top coal over where he was standing, without giving any previous warning, fell, killing him instantly.

ACCIDENT No. 2.—John Sproato, miner, aged twenty-eight years, killed by a fall of top coal in North Ashland colliery, April 2, 1885. He left a wife and four children. At time of accident, deceased and two other miners, Charles Metz and Fred. Young, were robbing pillars between the lower and west counter gangways in the Mammoth vein. About ten o'clock, A. M., they fired a blast—they sat down to let the smoke clear away and the place settle off. In about half an hour after firing the blast they went back to dress off the loose coal; deceased sounded the three-foot bench, which was over him, with a pick, concluded it was safe, and commenced to dress off the loose coal with the pick; while doing so, a large mass of top coal fell on him, killing him instantly.

ACCIDENT No. 3.—John Petrokufskie, miner, aged forty-five years, killed by a fall of top slate (clod) in Hickory Swamp colliery, April 25, 1885. He left a wife and one child. Deceased, at time of accident, was employed with another man, named Martin Kuxhinskie, robbing pillars. He (deceased) was barring off some loose coal at face of working place, when the top slate over where he was standing, which was of a very rotten, dangerous character, fell, killing him instantly.

ACCIDENT No. 4.—John Zurow, miner, aged thirty-seven years, killed by a fall of top coal in Black Diamond colliery, May 8, 1885. Single man. According to the evidence given at inquest, deceased and two other men, viz: John Nowatskie and Matthew Snyder, were engaged or employed working in a breast in the west counter. Not being satisfied with his working place, he went to an adjoining place without the consent or knowledge of the boss. While in the act of passing under some top coal, which was overhanging, it fell, and killed him instantly.

ACCIDENT No. 5.—Peter Starkoskie, miner, aged twenty-eight years, killed by a fall of top slate in Lykens Valley colliery, May 28, 1885. He left a wife and two children. Deceased and another miner, Francis Haak, were working in a breast in No. 1 drift, White's vein, Short Mountain side. After they both ate their dinners, deceased went up to face of breast; Haak

stopped to push down coal to loader. After he had the coal pushed down, he went up to face of breast, not seeing his butty then, he (Haak) went out to the adjoining breast, inquired of the men working there if they saw anything of his butty, to which they replied no. They, together with Haak, went into deceased's breast, one of the men, Henry Schnendy, lifted up a lump of a fresh fall of slate and found his lamp and cap. They, with the help of other men, lifted up the balance of the slate and found deceased; life was extinct.

Accident No. 6.—Israel Morgan, miner, aged forty-four years, fatally injured by a fall of coal and slate in West Brookside colliery, June 11, 1885. He died from the injuries received in about eight hours after accident, and left six children to mourn his loss. Deceased and another miner named Samuel H. Sharon were, at time of accident, driving chutes and cross-headings. After going in to work in the morning, they drilled, tamped, and fired two blasts in a cross heading. After the smoke had cleared away, Sharon started to shovel the loose coal out of cross-heading; deceased went to start to drive the next chute inside. He drilled a hole; Sharon helped him to tamp and fire it. It failed to perform the work intended in not throwing what was before it, only cracking and shattering the coal and overhanging slate. Sharon sounded the overlying slate with a drill and found it was almost ready to fall. While he (Sharon) was talking to Henry Mithamer, the inside boss, the deceased took a drill, gave the coal two or three punches; in an instant a mass of coal and slate fell out, covering him all but his head, causing injuries of such a character as to cause his death in about the time above stated.

Accident No. 7.—Michael Cuff, laborer, aged thirty-four years, killed by a fall of top slate in Morris Ridge colliery, July 2, 1885. Single man. According to the evidence elicited at inquest, deceased, at time of accident, was working with John E. Davis and Martin Canfield by night, driving the east gangway in the Buck Mountain vein in slope workings. After going in to work in the evening, Davis sounded the top; it sounded solid; after firing the first blast he sounded it again with the same result; they concluded it was safe to work under. After firing the third blast, without giving any previous warning it fell on deceased, killing him instantly. In my examination of the place after accident, I measured the slate that fell; it was about seven feet long by four and one half feet wide, and about one and one half feet thick at one end, tapering to a feather edge at the other end. It fell from a point about five or six feet out from gangway face. There was a slip or parting in the roof from where it fell, both next to face and high side of gangway. This, together with the concussion or jar of the blast, was the cause of its sudden falling.

Accident No. 8.—George Machamer, laborer, aged twenty two years, died July 13, 1885, from injuries received by a fall of coal on the 10th of same month, in Lykens Valley colliery. He was a single man. According to the evi-

dence produced at inquest, deceased and two other men named Israel G. Martz, laborer, and Henry C. Eckley, miner, were, at time of accident, working by night in the east gangway of No. 4 slope. Eckley and Martz were drilling a hole in bottom slate on high side of gangway with a hammer and jumper, or rock drill. When the hole was drilled down about thirteen inches Eckley told deceased to help Martz to drill it down about two inches deeper, while he (Eckley) was preparing a charge of powder. They were giving the hole the last round preparatory to charging it, when suddenly the coal on upper or high side of gangway gave a crack or bump, throwing out coal and covering deceased, breaking his thigh and inflicting such bodily injuries as to cause his death in three days after the accident.

ACCIDENT No. 9.—John Moss, miner, aged thirty-four years. Killed by a fall of top slate in Reliance colliery, September 16, 1885. He left a wife and two small children to mourn his sad fate. Deceased and another miner, named John Heebal, at time of accident were working in breast No. 47 on the west gangway. According to the evidence of Heebal, they were aware of the roof not being safe and made no effort to prop or take it down until it fell on deceased, while he with Heebal were loading a car about nine o'clock in the forenoon. Comment is unnecessary.

ACCIDENT No. 10.—Lewis N. Woodside, laborer, aged fourteen years, killed by a fall of top slate in Lykens Valley colliery, October 1, 1885. Single. By the evidence given at inquest deceased at time of accident, was working with Levi Eirich, miner, in breast No. 14, No. 1 level, west counter, Short Mountain side. According to the evidence Eirich, he (Eirich) sounded the top ten or fifteen minutes before the accident, and that it sounded solid, and that he had been mining coal for the last fifteen years. According to the testimony of other men, Eirich was considered a good, experienced, practical miner.

ACCIDENT No. 11.—John Dursinski, laborer, aged forty-three years, died on October 3, 1885, from injuries received by a fall of coal in Merriam colliery, September 14, 1885. He left a wife. Deceased and a miner named John Koppershinski, at time of accident, were working in breast No. 13, south tunnel workings. About between eleven and twelve o'clock, A. M., they were barring down a bench of coal about four inches thick; an overlying bench about between fifteen and eighteen feet long, seven feet wide, and three feet high, without giving any previous warning, fell striking both men, inflicting injuries on deceased which caused his death at the time above stated.

ACCIDENT No. 12.—Henry Constantine, miner, aged forty-four years, fatally injured by a fall of top rock in Morris Ridge colliery, October 13, 1885 He died in about three hours after receiving the injury, leaving a wife and four children. According to the evidence of his son, Thomas Henry Constantine, who was working with him at the time of accident, from the time they went in to work in the morning, until the accident occurred,

about nine and one half o'clock, A. M., they were raising the sheet-iron in chute to run the coal down the leader. When they had it raised up as far as the point where the accident occurred, deceased sounded the top and said it was all right. Almost in an instant after he said so it fell, striking and inflicting such injuries as to cause his death shortly after being removed to his home.

Accident No. 13.—Doutil Racofski, laborer, aged twenty-five years, killed by a fall of top coal, in Mount Carmel shaft, October 31, 1885. He left a wife and two children in Russian Poland. Deceased, at time of accident, was working with James Philips, miner, in No. 4, slant breast, in the west north dip workings. Philips was barring off some loose coal after a blast; deceased was sitting down about three feet outside of him. A bench of overhanging top coal about two feet at one end, three and one-third feet at the other end, about four feet long, and ten inches thick, that was slipped at high side of breast without giving any previous warning, fell on deceased, killing him instantly.

Accident No. 14.—William Clemens, miner, aged thirty-five years, died on November 10, 1885, from injuries received on October 29, 1885, by a fall of top slate in Monitor colliery. He left a wife and one child. Deceased and another miner, Jacob Artin, were working in breast No. 7, on the east slant, in Skidmore vein. They fired a blast, the coal striking and knocking out two props that had been stood under a piece of bad top. Shortly after firing the blast, deceased commenced clearing away the loose coal preparatory to setting the props. Artin told him to keep back, the place was not safe. Unmindful of the danger and the advice given, he continued clearing the coal away. While he was engaged in the perilous work, the piece of top slate, that the props were knocked from under, fell on him. The injuries he received caused his death in eleven days after accident.

Accident No. 15.—Lawrence Cannon, laborer, aged eighteen years, died on November 25, from injuries on the 20th, by a fall of coal in Big Mine Run colliery. He was a single man. Deceased, at time of accident, was working with his father, Martin, and brother, John, robbing pillars, between breasts No. 16 and 17, off the west slant gangway, upper drift workings. The accident occurred about one and one half o'clock, P. M. About 12.45 P. M., they fired a blast; after the smoke had cleared away, John dressed off the loose coal after the blast, and had the place made safe, as they thought. The father commenced to drill another preparatory to firing another blast while the two sons were loading the loose coal into buggy or small car, running it down and dumping the coal into chute. They were loading the third buggy, when a piece of top coal, over where they were working fell, striking deceased, inflicting injuries from which he died in five days after accident.

Accident No. 16.—Ralph Kirby, miner, aged forty-four years, died on

December 7, 1885, from injuries received on October 16, 1885, by fall of top coal in Logan colliery. He left a wife and one child to survive him. On day of accident, deceased and another miner, named William Sheaffer, were working together in breast No. 29, south dip, No. 4 slope. About three o'clock in the afternoon, while deceased was on his way walking down from face of breast toward dump chute, near gangway, where Sheaffer was dumping a buggy to help him push it up the face of breast, about a wheelbarrow full of shelly, loose top coal fell, some of it striking him and inflicting injuries which caused his death at the time above stated.

ACCIDENT No. 17.—William H. Meck, miner, aged fifty-two years, fatally injured by a fall of top slate, in Luke Fidler colliery, December 30, 1885. He died while being removed to his home, leaving a wife to mourn his loss. Deceased and three other men, named Benjamin Bowman, Samuel Schiverbenz, and Solomon J. Ohrendorf, were timbering the east, No. 8, gangway, No. 1 slope counter. They were, setting a set of timber ; Ohrendorf and Schiverbenz were cutting some plank to tighten the timber; deceased got a drill and tried to bar down the slate, preparatory to putting another set of timber. Failing in his efforts to bar it down, he concluded it would have to be blasted down. Shortly after, while he was standing on the gangway under it, it fell on him, causing bodily injuries from which he died shortly after accident.

Mine Cars and Machinery.

ACCIDENT No. 1.—John A. Kreiser, breaker-boy, aged fourteen years, fatally injured in West Brookside colliery breaker, by being crushed between dirt elevators and chute, on February 6, 1885, died same evening from the injuries received. By the evidence taken at inquest, the deceased at time of accident was employed to keep the dirt pushed down a small chute from elevator. According to the evidence, he was told by the outside foreman on several occasions not to go near the elevator, and was given a broom and scraper to keep the dirt away. Unmindful of the instructions given, he acknowledged to having kicked against one of the dirt pockets to knock off some of the dirt on it. While in the act his foot was caught as above stated.

ACCIDENT No. 2.—Thomas Challenger, slate-picker, aged thirteen years, killed on Williamstown colliery dirt bank, by being run over by loaded dirt cars on February 28, 1885. This accident occurred in the evening after quitting time. Deceased, while on his way home after work, in attempting to get on one of a loaded trip of dirt cars that were being hauled out on dirt bank, fell in between them. In his efforts to extricate himself from his perilous position, he was run over and instantly killed.

ACCIDENT No. 3. — Thomas Berry, miner, aged thirty-one years, died March 14, 1885, from injuries received the day previous, by being run over by empty and loaded mine cars at Williamstown colliery. He left a wife and three children. This accident occurred between three and four o'clock,

P. M. There were four loaded cars standing inside of tunnel mouth near breaker. Deceased had an empty car on the west track outside of tunnel, waiting until the loaded cars were pulled out, so as to admit of him pushing his empty car into tunnel, and run it out on east track to load timber on it. Joseph Rinehart and David Watkins, drivers, pulled the loaded cars out toward breaker tip. Deceased pushed his empty car into tunnel mouth, turned the switch, and was in the act of pushing it out to load the timber in it, when some of the cars of loaded trip ran back, striking the car that he was behind pushing, knocking him down, the empty car running over him. When found he was lying with his shoulder under the hind axle of last car, sustaining injuries of such a character as to cause his death about fifteen hours after the accident.

Accident No. 4.—Thomas Hollingsworth, miner, aged forty-three years, died on April 8, 1885, from injuries received on March 11, 1885, in Preston No. 2 colliery, by his hand being crushed between a lump of coal and back of mine car. He left a wife and four children. At time of accident, deceased was standing on bumper at back end of mine car, riding out the Mammoth vein west gangway; when passing the chute of breast No. 31, a large lump of coal caught against the chute turning it back, catching his left hand against the back end of car, causing injuries such as to cause his death at the time above stated.

Accident No. 5.—Dennis Cannon, laborer, aged twenty-six years, killed by being struck by mine cars at the bottom of No. 4 slope of Williamstown colliery, June 18, 1885; single man. This accident was caused by the breaking of side hook of loaded cars while they were being hoisted up the slope. Deceased was turning, or after turning a switch to run empty cars out of back switch tunnel at slope bottom in on west turn out, as the car was passing him the loaded cars came back down the slope, striking and throwing there over on top of deceased, killing him instantly.

Accident No. 6.—Edward Parry Hughes, slate-picker, aged ten years, died on June 29, 1885, from injuries received four days previous, by being run over by empty mine cars and locomotive outside, at Preston No. 3 colliery. The accident occurred in the evening, after the breaker had stopped work for the day. After quitting time, it was customary to run the boys that lived in Girardville and vicinity up from the breaker to slope in the empty mine cars with the locomotive, making it more convenient for them to reach their homes. At time of accident, it appears deceased was in the act of getting into one of the mine cars, when the engineer started to run the locomotive, thereby throwing deceased off the car, the oil-box catching, and rolling him against an embankment until the empty car next to locomotive had passed him. He rolled down the bank, the wheels of the locomotive passing over, and cutting off both his legs which caused his death in four days after accident.

Accident No. 7.—Bernard Harvey, door-tender, aged seventeen years, fa-

tally injured by being crushed between mine cars in Locust Spring colliery, September 12, 1885. He died from the injuries received in about ten minutes after accident. According to the evidence of Patrick Boyle, (driver,) he brought out a trip of four loaded cars to turn-out, conveniently west of dump chute. Deceased rode out on rear end of last car; on arriving on turn-out, Boyle unhitched his mules, turned them around, and took them in the gangway inside of loaded cars. Deceased and Boyle took out the sprags, and run in the first car and dumped it into chute, run it back and into gangway east of dump chute; they ran in the second car and dumped it. While the coal was running out of it, deceased went and pushed the first car that was dumped back further, so as to leave room for the balance of the cars when empty. After pushing it back far enough he came back, and was standing behind the car that was being dumped, when the third car came running in, and before deceased could get out of the way, he was caught between the two cars, receiving injuries which caused his death as stated.

ACCIDENT No. 8.—Samuel Hamilton, laborer, aged forty-six years, killed at Williamstown colliery, by being crushed under loaded mine car and tip, at breaker, on September 24, 1885. Single man. Evidence of Nicholas Adams, one of the tip men, "I work at Williamstown colliery, on breaker tip; was working on September 24. The accident occurred about three o'clock P. M. About one minute before, I saw him under the car on tip; I heard him halloo 'new chute,' meaning that the car that was about to be run in on tip should be dumped in that chute. He was then about between forty and fifty yards north of tip; he was on the west road leading into tip-house. When found under loaded car on tip, he was lying on his right side, his face toward north. I heard him groan once; that was the last sign of life I saw in him."

Evidence of William H. Morris: "When I was informed that there was a man under the car, I went over from the ticket box that was in tip-house, east of where accident occurred; I went over, saw deceased under the car; I helped to get him out. He was caught between the east bumper of car and cross-piece at head of dump chute. The cross-piece was put there to prevent the car tipping too high behind." By the evidence adduced, the deceased, in running in along with the car, in attempting to cross in front of it while in motion, slipped and fell, or was struck and knocked down with the car. No person could be found who saw the accident occur.

ACCIDENT No. 9.—Andrew Belostrari, slate-picker, aged seventeen years, killed in Luke Fidler colliery breaker, October 9, 1885, by putting his foot down through the hole or aperture in which the coal runs down to rollers. Deceased, at time of accident, was employed picking slate out of the coal as it ran down chute from counter screen to rollers. While thus engaged, unmindful of the danger, he put his foot down the hole or aperture, the rollers catching and drawing him in down to his hip, receiving injuries which caused his death. He was a single man.

Accident No. 10.—James Van Horn, laborer, aged thirty-one years, killed in Big Mountain colliery, October 23, 1885, by being crushed between top of loaded mine car and top rock. He left a wife. Deceased was employed driving and loading in straight vein drift. About between twelve and one o'clock P. M., he was taking out a trip of three cars, when at a point about two hundred and fifty yards inside of drift-mouth, in attempting to jump on the cars after spragging them, he was caught between top of second car and top rock, receiving injuries from which he died about twenty minutes after accident. In my investigation of this accident, I learned that deceased was cautioned not to attempt to get on the cars after spragging them to let the trip pass, and get on the hind end of last car.

Accident No. 11.—Dennis Donlon, laborer outside, aged sixty-four years, killed at Pennsylvania colliery, December 7, 1885, by being struck by dirt-car at bottom of dirt-plane. He left a wife and six children. Deceased, at time of accident, was employed at bottom of drift-plane. Between ten and eleven o'clock A. M., two empty dirt-cars were run over head of plane without the safety block being set in its place on rail or chain, and cable attached by the men on top of plane, the cars running down, one of them striking and killing deceased instantly.

Suffocated by Rush of Mud.

Accident No. 1.—James Ennis, miner, aged thirty-one years; Charles Dougherty, miner, aged . . . . . years; Michael Hede, laborer, aged thirty years; Martin McKeirns, driver, aged nineteen years. Suffocated by rush of mud, (mountain clay,) in Mammoth vein, east gangway, North Ashland colliery, May 13, 1885. Ennis left a wife and five children; Dougherty, a wife and four children; Hede, a wife; McKeirns was a single man.

Ennis and another miner, named Thomas Jones, had a contract to rob out the above-named gangway, and had Dougherty, Hede, McKeirns, with others employed.

Evidence taken at inquest held by Coroner Halberstadt.

George Edwards, *sworn:*

Am a miner, was working on day of accident timbering chute of breast No. 43, in east gangway, Mammoth vein. There was no rush of water came with the mud, neither did I, in cleaning up the mud, see any lodgments of water. I saw nothing unusual in robbing there more than in other collieries. I saw Charles Dougherty, James Ennis, and Michael Hede after they were found. I identified them by their features.

William Lovelle, *sworn:*

Previous to accident I was helping to rob out the Mammoth vein, west gangway of North Ashland colliery. On the fourth day after accident, I went to work in the Mammoth vein, east gagway, to clean up the mud. McKeirns was found in chute of breast No. 47; he was covered up with clay. The robbing is done there the same as at other collieries.

PATRICK F. HALEY, *sworn:*

I am a miner; I work in North Ashland colliery, helping to rob out the Mammoth vein, east gangway. I was working for Jones and Ennis. At time of accident, I was driving a cross-heading through pillar between Nos. 43 and 44 breasts. I heard a noise; I called out what is that: got no answer. I got down and ran out the gangway. There was no water came with the rush of mud. It came down the manway between Nos. 45 and 46 breasts. There was ice came down with the mud.

THOMAS SIMPSON, *sworn:*

I am a contractor robbing out the Mammoth vein, west gangway. I was helping to load or clean up the mud in the east gangway; I was there until we found Hede and Dougherty. The rule for robbing is to take all the coal that can be got with safety.

GEORGE MORRIS, *sworn:*

I am a chute starter. I went into east gangway in about half an hour after accident. I was there when Ennis was found in chute of breast No. 46. His body was covered with mud.

DAVID HUGHES, *sworn:*

I am a miner; am working in North Ashland colliery. I helped to recover McKeirns. I don't know anything about the accident. Am satisfied the timber that caught James Ennis was knocked out by the rush of clay. I helped to rob the Potts colliery, west gangway; we always took out all the coal we could with safety.

DAVID DAVIS, *sworn:*

Am a miner. I work at North Ashland colliery. Was not there on day of accident. I have been there since accident. I found McKeirns in chute of No. 47 breast on Saturday, June 6, about five and a half o'clock in the evening. The gangway seemed to be in good order.

MARTIN HEFFUN, *sworn:*

Am loader-boss at North Ashland colliery. When I got to the bottom of the slope on morning of accident, I met James Ennis. He said, "Martin, you and I will take a walk in to see if we can get the wagons on the turn-out." We found the gangway and turn-out in good condition. Ennis told me that Thomas told him that he (Jones) told him (Ennis) that there was a fall, and that he (Jones) heard the place working. Ennis said to me, "I guess we will get along all right." The first trip of four cars were loaded and hauled out. The second trip, which consisted of seven cars, were hauled in, four of them were left to be loaded outside of point where accident occurred. The other three were hauled in, one was left at forty-five chute, the other two were left at manway between forty-five and forty-six chute to be loaded. Ennis and Thomas Hede were standing on gangway alongside of car at manway between forty-five and forty-six. Michael

Hede was up in chute pushing coal down into car. I went out to forty-five chute where Charles Dougherty was starting the battery; I told him to take his time; there was only one car to be loaded at his chute. I told him I was going outside, and would be back in a short time, and help him to top off the car. While on my way out the gangway a concussion of air took place, which put out my light. I saw men running out the gangway; I called to them to come back; all hands were closed in. I saw Thomas Hede struggling in the mud; with the help of other men I pulled him out of it. There was no water came with the mud.

Christian Schaum, *sworn:*

I am inside foreman at North Ashland colliery. On morning of accident when I came to the office outside near breaker, James Ennis (deceased) told me that forty-five pillar had run last night, that Thomas Jones had told him. I said, "all right." When I went down into the mine, I first went into the Buck Mountain vein to see about the brattice that I was having put in. After I had visited that part of the workings, I went in the East Mammoth gangway. When in as far as No. 43, I felt a concussion of air. I went in and saw Thomas Hede caught in the mud. I helped other men and pulled him out of it. The pillar that ran was between Nos. 45 and 46 breasts; it was left to keep the turnout strong. We drove holes from face of breasts up through chain pillar at different points to let off any water that might be on old water-level gangway.

Michael Horan, *sworn:*

I am repairman at North Ashland colliery. I worked on night previous to accident. I heard the fall and concussion of air. I went in along gangway and up manway between forty-five and forty-six breasts. The place was working. I said to Thomas Jones the place was not safe, let us get out of here. We went outside and made our shift timbering in gangway. We cut no coal that night.

John Hinkle, *sworn:*

I am outside foreman at North Ashland colliery. There was no water in breach hole over where the rush of clay came from.

Patrick McHale, *sworn:*

I am a miner, and work in North Ashland colliery. Was working on night previous to accident. Heard the concussion of air. Jones said the gangway was closing. We went in. The coal was working. The rush was up in the breast. It did not do any damage to the gangway.

Thomas Jones, *sworn:*

James Ennis and myself had the contract of robbing out the gangway. I was working by night that week. Was working on night previous to accident. I heard a racket about three o'clock in the morning; it lasted about eight or nine minutes. The cause of the racket was the wind

which would first go one way or direction then in another. I told James Ennis (my partner) next morning of what I had heard and seen; I told him not to allow any person to load off the road that morning. The place was robbed like all other places.

JOHN VEITH, *sworn:*

I am mining superintendent. Was at North Ashland colliery on day of accident. Our rule is to put in sufficient timber to keep the working places safe, and allow no undue robbing.

[Attached to this report is a sketch showing where the victims of this disaster were found.]

TABLE I.—*Showing location of collieries in the Sixth Anthracite Mine District of Pennsylvania.*

Name of Colliery.	Name of Operator.	Location—County.	Name of Superintendent.	Post-Office Address.
Bast,	Philadelphia and Reading Coal and Iron Co.,	Big Mine Run, Schuylkill co.,	John Carl,	Mt. Carmel, Northumberl'd co.
Burnside,	do. do.	Carbon Run, Northumberl'd co.	Monroe T. Schreffler,	Shamokin, do.
Bear Valley,	do. do.	Bear Valley, do.	do.	do. do.
Big Mountain,	Patterson & Llewellyn,	Shamokin, do.	David Llewellyn,	do. do.
Black Diamond,	Schwenk, Robertson & Co.,	Mt Carmel twp., do.	Schwenk & Robertson,	Mt. Carmel, do.
Big Mine Run,	Jeremiah Taylor,	Big Mine Run, Schuylkill co.,	Jeremiah Taylor,	Ashland, Schuylkill county.
Bellmore,	S. S Beckel & Co.,	Conyngham twp., Columbia co.,	Tobias Bickel,	Mt. Carmel, Northumberl'd co.
Buck Ridge,	Philadelphia and Reading Coal and Iron Co.,	Coal twp., Northumberland co.,	Monroe T. Schreffler,	Shamokin, do.
Centralia,	Lewis A. Riley & Co.,	Centralia, Columbia co.,	Edward Reese,	Centralia, Columbia county.
Continental,	Lehigh Valley Coal Company,	Conyngham twp., Columbia co.,	A. D. Brown,	do. do.
Cameron,	Mineral Railroad and Mining Co.,	Shamokin, Northumberland co.	Holden Chester,	Shamokin, Northumberland co.
Excelsior,	Excelsior Coal Mining Company,	Coal twp., do.	Andrew Robertson,	do. do.
Enterprise,	Thomas Baumgardner & Co.,	do. do.	Joseph Boden,	Excelsior, do.
Garfield,	Garfield Coal Company, Limited,	do. do.	William H. Douty,	Shamokin, do.
Helfenstein,	Philadelphia and Reading Coal and Iron Co.,	Helfenstein, do.	John Carl,	Mt. Carmel, do.
Henry Clay, No. 1,	do. do.	Shamokin, do.	Monroe T. Schreffler,	Shamokin, do.
Hickory Ridge,	Mineral Railroad and Mining Company,	Coal twp., do.	Holden Chester,	do. do.
Hazle Dell,	Lewis A. Riley & Co.,	Conyngham twp., Columbia co.,	Edward Reese,	Centralia, Columbia county.
Hickory Swamp,	Union Coal Company,	Coal twp., Northumberland co.,	Edwin Ludlow,	Shamokin, Northumberland co.
Keystone,	Philadelphia and Reading Coal and Iron Co.,	Locust Dale, Schuylkill co.,	John Carl,	Mt. Carmel, do.
Locust Gap,	do. do.	Locust Gap, Northumberl'd co.,	Monroe T. Schreffler,	Shamokin, do.
Locust Spring,	do. do.	do. do.	do.	do. do.
Locust Run,	do. do.	Conyngham twp., Columbia co.,	John Carl,	Mt. Carmel, do.
Luke Fidler,	Mineral Railroad and Mining Company,	Coal twp., Northumberland co.,	Holden Chester,	Shamokin, do.
Lancaster,	Smith & Keiser,	do. do.	Smith & Keiser,	do. do.
Logan,	Lewis A. Riley & Co.,	Conyngham twp., Columbia co.,	Edward Reese,	Centralia, Columbia county.
Monitor,	Philadelphia and Reading Coal and Iron Co.,	Locust Gap, Northumberland co.	Monroe T. Schreffler,	Shamokin, Northumberland co.
Merriam,	do. do.	Mt. Carmel twp., do.	John Carl,	Mt. Carmel, do.
Mt. Carmel Shaft,	do. do.	do. do.	Monroe T. Schreffler,	Shamokin, do.
Mt. Carmel,	Thomas M. Righter & Co.,	do. do.	Thomas M. Righter,	Mt. Carmel, do.
Morris Ridge,	Isaac May & Co.,	Conyngham twp., Columbia co.,	{Jas. May, outside; Geo. Troutman, inside.	Shamokin, do.
North Franklin, No. 1,	Philadelphia and Reading Coal and Iron Co.,	Trevorton, Northumberl'd co.,	Monroe T. Schreffler,	do. do.
North Franklin, No. 2,	do. do.	do. do.	do.	do. do.
North Ashland,	do. do.	Conyngham twp., Columbia co.,	John Carl,	Mt. Carmel, do.
Neilson Shaft,	J. Langdon & Co.,	Shamokin, Northumberland co.	A. H. Storrs,	Shamokin, do.
Peerless,	Philadelphia and Reading Coal and Iron Co.,	do. do.	Monroe T. Schreffler,	do. do.
Potts,	do. do.	Locust Dale, Schuylkill co.,	John Carl,	Mt. Carmel, do.
Pennsylvania,	Union Coal Company,	Mt. Carmel, Northumberl'd co.	Edwin Ludlow,	Shamokin, do.
Reliance,	Philadelphia and Reading Coal and Iron Co.,	do. do.	John Carl,	Mt. Carmel, do.
Royal Oak,	Tillet & Brother,	Shamokin, do.	Tillet & Brother,	Shamokin, do.
Stirling,	Kendrick & Co.,	Carbon Run, do.	William Berry,	do. do.
Short Mountain & Lykens Valley,	Lykens Valley Coal Company,	Wiconisco twp., Dauphin co.,	Thomas M. Williams,	Lykens, Dauphin county.
Star,		Coal twp., Northumberland co.,	{And. G. White, inside, & John Shaw, outside,	Shamokin, Northumberland co.
Tunnel,	Philadelphia and Reading Coal and Iron Co.,	Ashland, Schuylkill co.,	John Carl,	Mt. Carmel, do.
Williamstown,	Summit Branch Railroad Company,	Williams twp., Dauphin co.,	Thomas M. Williams,	Lykens, Dauphin county.

TABLE II.—*Showing Character of Coal, Production, Number of Employés, Days Employed, Casualties, &c., in the Sixth Anthracite Mine District, for the year ending December 31, 1885.*

COLLIERIES.	Operators.	Character of Coal, Anthracite or Semi-Anthracite, Bituminous or Semi-Bituminous.	Drift, slope, or shaft.	Number of inside workmen.	Number of outside workmen.	Total employees.	Number of days worked inside.	Number of days worked outside.	Number of horses and mules.	PRODUCTION.		CASUALTIES.				
										Number of tons produced.	Number of tons shipped.	Killed inside.	Killed outside.	Injured inside.	Injured outside.	Total killed and injured.
Bast,	Phila. and Reading C. and I. Co.,	Anthracite.	2 Slopes,	189	191	380	230	230	36	123,162.16	116,191.01			1	1	2
Burnside,	do. do.	do.	2 Sl's & 1 T'l.,	167	154	321	229.75	229.75	33	99,455.18	93,826.05			2	1	3
Bear Valley,	do. do.	do.	1 Shaft,	158	167	325	237.75	237.75	44	98,439.05	92,867.04	2		2	1	5
Big Mountain,	Patterson & Llewellyn,	do.	1 Sl'e & 6 D'fts	339	136	475	269.50	269.50	70	162,235.03	155,569.18	1		3	1	5
Black Diamond,	Schwenk, Robertson & Co.,	do.	1 Slope,	40	42	82	174.9	174.9	5	24,454.17	23,304.17	1		2		3
Big Mine Run,	Jeremiah Taylor,	do.	1 Sl'e & 2 D'fts	260	185	445	217.75	217.75	40	150,274.18	146,750.18	1		1	1	3
Bellmore,	S. S. Bickel & Co.,	do.	1 Sl'e & 1 T'l.,	131	135	266	190.2	190.2	28	66,767.16	66,102.06					
Buck Ridge,	Phila. and Reading C. and I. Co.,	do.	2 Slopes,		2	2	No	work du	ring	year. No	production.					
Centralia,	Lewis A. Riley & Co.,	do.	2 Slopes,	157	223	380	210.65	210.65	30	188,112.02	178,092.02		1		2	3
Continental,	Lehigh Valley Coal Company,	do.	2 Sl's & 1 T'l.,	6	13	19			1	No	production.	Col	lie	ry	idl	e.
Cameron,	Mineral Railroad and Min'g Co.,	do.	3 Sl's & 4 D'fts	528	220	748	301.25	301.25	89	245,436.09	230,094 09			10		10
Excelsior,	Excelsior Coal Mining Company,	do.	2 Sl's & 3 D'fts	252	149	401	296.1	296.1	41	177,177.12	167,149.08	1		8		9
Enterprise,	Thomas Baumgardner & Co.,	do.	3 Slopes,	338	136	474	240.25	240.25	37	132,851.04	127,366.19			1		1
Garfield,	Garfield Coal Company, Lim.,	do.	1 Slope,	54	34	88	158.75	158.75	11	20,242.16	19,995.16	2		2	2	6
Helfenstein,	Phila. and Reading C. and I. Co.,	do.	1 Slope,		2	2				No	production.	Col	lie	ry	idl	e.
Henry Clay Shaft,	J. Langdon & Co., and Phila. and Reading C. and I. Co.,	do.	1 Sh'ft & 2 Sl's	13	29	42			12	No	production.					
Hickory Ridge,	Phila. and Reading C. and I. Co.,	do.	2 Slopes,	139	79	218	294 8	294.8	25	41.855 07	41,649.07	2		4		6
Hazle Dell,	Lewis A. Riley & Co.,	do.	1 Sl'e & 1 T'l.,	148	15	163	210.65	210.65	27	Coal prepar	ed Centralia	br'	ker	1		1
Hickory Swamp,	Union Coal Company,	do.	1 Sl'e & 3 D'fts	205	126	331	235.50	235.50	36	66,011.02	61,250.02	1		3		4
Keystone,	Phila. and Reading C. and I. Co.,	do.	2 Slopes,	12	12	24	Idle.		23	No	production.	Col	lie	ry	idl	e.
Locust Gap,	do. do.	do.	2 Slopes,	126	160	286	135.25	135.25	26	59,260,19	55,915.18			3		3
Locust Spring,	do. do.	do.	1 Slope,	253	157	410	203.50	203.50	43	115,180.16	108,661.14	1		1		2
Locust Run,	do. do.	do.	1 Slope,	2	13	15	Idle.			No	shipments.	Col	lie	ry	idl	e.
Luke Fidler,	Mineral Railroad and Min'g Co.,	do.	1 Sh'ft & 3 Sl's	284	155	439	291.95	291.95	51	146,875.16	139,845.16	1	2	12	4	19
Lancaster,	Smith & Keiser,	do.	4 Drifts,	38	24	62	89.25	89.25	13	7,903.10	7,770.00					
Logan,	Lewis A. Riley & Co.,	do.	4 Slopes,	384	241	625	195.3	195.3	51	212,315.17	199,711.07	2		1		3
Monitor,	Phila. and Reading C. and I. Co.,	do.	3 Slopes,	238	147	385	231	231	39	142,491.12	134,326.63	1		1		2
Merriam,	do. do.	do.	2 Slopes,	278	184	462	212.25	212.25	49	121,528.00	114,648.15	1		2		3
Mt. Carmel Shaft,	do. do.	do.	1 Shaft,	339	209	548	222.75	222.75	68	215,596.12	203,392.15	2		2		4
Mt. Carmel,	Thomas M. Righter & Co.,	do.	2 Slopes,	250	136	386	212.1	212.1	40	129,933.17	126,747.17			4		4
Morris Ridge,	Isaac May & Co.,	do.	1 Sl'e & 1 D'ft	175	121	296	226.25	226.25	19	105,684.15	102,004.15	2		1		3
North Franklin, No. 1,	Phila. and Reading C. and I. Co.,	do.	1 Sl'e & 2 D'fts		2	2	Idle.			No	shipments.	Col	lie	ry	idl	e.

North Franklin, No. 2,	do.	do.	do.	1 Sl'e & 1 D'ft	143	142	285	240.50	240.50	41	115,231.10	108,708.17	..	..	1	..	1
North Ashland, ...	do.	do.	do.	1 Slope, ..	13	49	62	68	68	7	37,702.02	35,568.11	5	..	3	..	8
Neilson Shaft, ...	J. Langdon & Co., ...		do.	1 Sh'ft, sink'g	22	22	44	Sinking.		8	No	shipments.	..	..	..	1	1
Peerless, ...	Phila. and Reading C. and I. Co.,		do.	1 Sl'e & 1 T'l.,	164	106	270	174	174	17	45,592.14	13,011.17	..	..	..	..	..
Potts, ...	do.	do.	do.	2 Slopes, ...	...	3	3	Idle.			No	shipments.	Colliery Idle.				
Preston, No. 2, ...	do.	do.	do.	1 Slope, ...	66	124	190	159.50	159.50	31	48,059.07	45,339.11	1	..	..	..	1
Preston, No. 3, ...	do.	do.	do.	2 Slopes, ...	147	140	287	229	229	47	78,408.04	73,970.08	..	1	..	..	1
Pennsylvania, ...	Union Coal Company, ...		do.	4 Slopes, ...	472	231	703	147.25	147.25	74	108,188.14	98,640.19	1	1	9	..	11
Reliance, ...	Phila. and Reading C. and I. Co.,		do.	2 Slopes, ...	161	139	300	228.25	228.25	35	122,116 05	115,204.00	1	..	1	..	2
Royal Oak, ...	Tillet & Brother, ...		do.	2 Drifts, ...	19	11	30	188	188	3	4,278.15	3,668.15	..	..	..	..	..
Sterling, ...	Kendrick & Co., ...		do.	1 Slope, ...	165	114	279	221.50	221.50	24	86,669.03	86,243.18	..	..	5	..	5
Short Mt. & Lyk's Val.,	Lykens Valley Coal Company, .		do.	3 Sl's & 1 D'fts	636	425	1,061	298.75	298.75	191	217,174.03	189,578.18	3	1	12	3	19
Star, ...	.....		do.	1 Slope, ...	53	43	96	92	92	5	6,814.19	6,614.19	..	..	..	..	..
Tunnel, ...	Phila. and Reading C. and I. Co.,		do.	2 Slopes, ...	167	179	346	232 75	232.75	38	131,456.05	126,846.01	..	..	1	..	1
Williamstown, ...	Summit Branch Railroad Co., .		do.	5 Sl's & 1 T'l.,	780	364	1,144	294.75	294.75	162	344,479.17	314,574.11	1	4	10	2	17
Grand totals, ...	.....	.....	.....	.....	8,511	5,691	14,202	8,091.65	8,091.65	1,673	4,205,420.17	3,961,206.17	..	..	..	..	..

TABLE No. III.—*List of Fatal Accidents occurring in the Mines of the Sixth Anthracite district, for the year ending December 31, 1885.*

Date of accident.	Name of person injured.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accident in Brief.
Jan. 5	Thomas Laughlin, miner,	50	Married,	5	Garfield,	Shamokin, Northumber'd co.	Jan. 7	Fatally injured by falling down slope; died about two hours after receiving injury.
26	John Doyle, miner,	47	Married,	4	Logan,	Centralia, Columbia co.,	27	Died from injuries received Jan'y 10, by falling down cross-hole, running from blast.
29	Charles James, miner,	33	Married,	1	Garfield,	Shamokin, Northumber'd co.	31	Died same day of injuries received from explosion of dualin.
Feb. 6	J. A. Kreiser, slate-picker,	14	Single,		West Brookside,	Porter, twp., Schuylkill co.,	Feb. 9	Fatally injured, being caught in breaker elevator; died about two hours after accident.
24	James Manning, miner,	42		2	Mount Carmel Shaft,	Mt. Carmel tp., North'd co.,	27	Killed by a fall of top coal.
28	T. Challenger, slate-picker	13	Single,		Williamstown Colliery,	Williamstown, Dauphin co.,	Mar. 2	Killed; run over by loaded dirt cars while on his way home from work.
Mar. 14	Thomas Berry, miner,	31	Married,	3	Williamstown Colliery,	do. do.	16	Died from injuries received the day previous, being run over by mine cars.
30	John Rigotti, miner,	40	Married,	5	Pennsylvania Colliery,	Mt. Carmel tp., North'd co.,	31	Died from injuries received on the 23d, by a premature blast.
April 2	John Sproats, miner,	28	Married,	4	North Ashland,	Dark Corner, Columbia co.,	Apr. 3	Killed by a fall of top coal.
8	T. Hollingsworth, miner,	43	Married,	4	Preston No. 2,	Girardville, Schuylkill co.,	reported slightly.	Died from injuries received March 11; hand caught between lump of coal and top of car.
25	John Petrohufskie, miner,	45	Married,	1	Hickory Swamp,	Coal twp. Northumber'd co.,	Apr. 28	Killed by fall of top slate.
May 8	John Zerron, miner,	37	Single,		Black Diamond,	Mt. Carmel tp., North'd co.,	May 9	Killed by fall of top coal.
9	E. Saduskie, slate-picker,	14	Single,		Luke Fidler,	Shamokin, Northum'd co.,	12	Suffocated by steam.
11	Martin Laville, do.	14	Single,		Centralia,	Centralia, Columbia co.,	12	Died from injuries received by being run over by big railroad cars.
13	Chas. Dougherty, miner,		Married,	4	North Ashland,	Dark Corner, Columbia co.,	13	Killed; suffocated by rush of mud.
13	Michael Hede, laborer,	30	Married,		do.	do. do.	13	do. do. do.
13	James Ennis, miner,	31	Married,	5	do.	do. do.	13	do. do. do.
13	Martin McKurns, driver,	19	Single,		do.	do. do.	13	do. do. do.
22	James Kilmurray, miner,	34	Married,		Hickory Ridge,	Coal twp. Northumber'd co.,	25	Killed by falling down manway.
28	Peter Starkiskie, miner,	28	Married,	2	S. Mountain and Lykens Val.,	Wiconisco, Dauphin co.,	29	Killed by fall of top slate.
June 11	Israel Morgan, miner,	44	Married,	6	West Brookside,	Porter twp., Schuylkill co.,	June 12	do. do.
12	John Meiskie, miner,	27	Single,		Hickory Ridge,	Coal twp. Northumber'd co.,	15	Fatally injured; fell down manway. Died same day.
17	James Norrance, miner,	53	Married,	2	Bear Valley,	do. do.	18	Killed by fall of loose coal and dirt, while putting in a relief battery.
18	Den's Cannon, bot'm-man,	26	Single.		Williamstown,	Dauphin county,	19	Killed; struck by mine car-hooks, while cars were being hoisted up No. 4 slope.

	22	John Glinskie, miner, . . .	53	Married,	4	Excelsior, ...	Coal twp. Northumber'd co.,		23	Died from injuries received on the 15th, by the explosion of a keg of powder.
	29	E. P. Hughes, slate-picker,	10	Single, . .		Preston No. 3, ...	Girardville, Schuylkill co., .		30	Died from injuries received on the 25th; run over by mine cars and locomotive.
July	2	Michael Cuff, laborer, . .	31	Single, . .		Morris Ridge, ...	Conyngham tp., Colum'a co.,	July	3	Killed by a fall of top slate.
	1	Joseph Lester, engineer, .	51	Married,	5	Williamstown, ...	Dauphin county, ...		6	Killed by explosion of steam-boiler.
	13	Geo. Machamer, laborer, .	22	Single, . .		S. Mountain and Lykens Val.,	Lykens, Dauphin county, . .		14	Died from injuries on the 10th, by fall of coal.
	29	J. Dunlap, Jr., slate-picker	12	Single, . .		do. do.,	Wiconisco, Dauphin co., . .		30	Run over by cars; died same evening.
Sept.	12	B. Harvey, door-tender, .	17	Single, . .		Locust Spring, ...	Locust Gap. Northum'd co.,	Sep.	14	Killed; crushed between mine cars.
	16	John Moss, miner, ...	31	Married,	2	Reliance, ...	Mt. Carmel, Northum'd co.,		17	Killed by fall of top slate.
	24	Samuel Hamilton, laborer,	46	Single, . .		Williamstown, ...	Dauphin county, ...		25	Killed; crushed between car and breaker.
Oct.	1	Lewis Woodside, laborer, .	14	Single, . .		S. Mountain and Lykens Val.,	Wiconisco, Dauphin co., . .	Oct.	3	Killed by fall of top slate.
	3	John Diminskie, laborer, .	43	Married, . .		Merriam, ...	Locust Summit, North'd co.,		7	Died; injured by fall of coal September 14.
	9	A. Beloshara, slate-picker,	17	Single, . .		Luke Fidler, ...	Shamokin, Northum'd co., .		9	Killed; caught in breaker rollers.
	13	Henry Constantine, miner,	44	Married,	4	Morris Ridge, ...	Conyngham tp., Colum'a co.,		14	Killed by fall of top rock.
	23	James Van Horn, laborer,	31	Married, . .		Big Mountain, ...	Coal twp. Northumber'd co.,		24	Killed; crushed between top of car and rock.
	31	Charles Shultz, miner, . .	31	Married,	2	Bear Valley, ...	do. do.	Nov.	2	Fell down manway; smothered by loose coal and dirt.
	31	Donût Roefski, laborer, . .	25	Married,	2	Mount Carmel Shaft, ...	Mt. Carmel tp., North'd co.,		2	Killed by fall of top coal.
Nov.	10	William Clemens, miner, .	35	Married,	1	Monitor, ...	do. do.	. . . .		Died; injured by fall of top rock October 29.
	25	Lawrence Cannon, laborer,	18	Single, . .		Big Mine Run, ...	Butler twp., Scuuylkill co., .		22	Fatally injured by fall of coal on the 20th.
Dec.	7	Dennis Doulon, laborer, .	61	Married,	6	Pennsylvania, ...	Mt. Carmel tp., North'd co.,	Dec.	8	Killed at breaker; struck by empty cars pushed overhead without attaching the chain.
	7	Ralph Kirby, miner. . . .	41	Married,	1	Logan, ...	Centralia, Columbia co., . .	. . . . .		Died; injured by fall of coal October 16.
	30	William H. Meck, miner, .	52	Married, . .		Luke Fidler, ...	Shamokin, Northum'd co., .	Jan.	1	Fatally injured by a fall of top slate; died while being removed to his home.

REGISTER OF NON-FATAL CASUALTIES—*Sixth Anthracite District, for the year ending December 31, 1885.*

DATE.	Names.	Collieries.	Occupation.	Remarks.
Jan. 3	Jacob Weikle,	Merriam,	Miner,	Leg broken by a fall of coal.
3	August Woller,	Monitor,	do.	Arm broken by a piece of rock falling on him.
8	Joseph Tedrick,	Hickory Ridge,	do.	Injured by a premature blast.
9	George Phillips,	Sterling,	Driver,	Arm broken by being caught between mine cars.
12	Sidney Challinger,	Williamstown,	Miner,	Injured about head and body by a fall of top slate.
13	John Garret,	Sterling,	do.	Arm broken by talling off mine car.
13	Andrew Dubinskir,	Luke Fidler,	do.	Arm broken by fall of slate.
16	Patrick Martin,	Williamstown,	do.	Slightly burned by carburetted hydrogen gas.
21	August Kline,	Luke Fidler,	do.	Foot hurt by a lump of rock falling on him.
Feb. 3	A. A. Martin,	Pennsylvania,	do.	Seriously injured about head by a premature blast.
3	Pinaminto Francisco,	do.	do.	Seriously injured about head by a premature blast.
6	George Henry,	Cameron,	Driver,	Leg injured by mine car running over it.
6	Thomas Narcavitch,	do.	Miner,	Hurt by a fall of coal.
9	Charles Berry,	do.	Driver,	Foot mashed by being crushed between bumpers of mine cars.
12	Lawrence Haile,	do.	do.	Arm broken by being caught between mine car and chute.
13	Ernst Lenschner,	West Brookside,	Tipman,	Small bone of leg broken by mule knocking him down and tramping on him.
14	Reuben Ball,	Hazle Dell,	Miner,	Injured about body by a fall of coal and rock.
16	Joseph Groginskir,	Luke Fidler,	do.	Leg broken by a fall of coal.
18	Joseph Duceman,	Bear Valley,	Platform-man,	Head injured by being struck with handle of windlass.
18	Michael Cuff,	North Ashland,	Loader,	Arm broken by being crushed between mine cars.
18	Daniel Evans,	Mt. Carmel shaft,	Miner,	Two ribs broken and cut on head by mine car door falling on him.
21	John Seymour,	Centralia,	Car loader,	Foot injured by being crushed between the bumpers of cars.
21	John Kealy,	do.	Slate-picker,	Leg broken by him falling abont fifteen feet.
25	Lewis Kniley,	Lykens Valley,	Miner,	Injured by a fall of slate.
26	William Hutchinson,	Luke Fidler,	Inside boss,	Burned on hands and face CH gas.
26	John O. Buskie,	do.	Bratticeman,	Injured by being knocked under mine cars at bottom of slope.
26	Frank Klemack,	do.	do.	Injured by being knocked under mine cars at bottom of slope.
25	Ralph Dubinskie,	do.	Miner,	Burned on face, arm, and right hand by CH gas.
March 2	Albert Shultz,	Cameron,	do.	Injured by a premature blast.
2	Peter Gottshall,	do.	do.	Injured by a fall of top coal.
7	Anthony Joblinskie,	Luke Fidler,	do.	Leg broken by a fall of coal.
9	George Hohl,	Pennsylvania,	do.	Slightly burned on face and hands by CH gas.
9	Michael Cavanagh,	Big Mountain,	do.	Injured by falling down his breast.
10	Leonard Glessner,	North Ashland,	do.	Rib and collar bone broken by a fall of top slate.
11	John Griffiths,	Excelsior,	do.	Arm broken and ankle dislocated by a fall of top slate.
13	John Campbell,	Garfield,	Car-loader,	Leg broken by being struck by empty oil barrel rolling down hill.
14	Andrew Shushock,	Excelsior,	Laborer,	Leg broken by a fall of coal.
14	William H. Maguin,	W. Brookside,	do.	Small bone of leg broken by a fall of slate.
16	John Glinskie,	Cameron,	Miner,	Leg broken by a fall of coal.
18	Andrew Kondro,	Sterling,	do.	Burned on hands and face by CH. gas.
21	John Wells,	Bast,	do.	He fell on a drill and injured his stomach.
23	Anthony Bobaluskie,	Mt. Carmel,	do.	Head cut by a fall of rock.
April 4	John Snyder.	Black Diamond,	do.	Ankle hurt by a lump of coal crushing it against a prop.
9	John Ebey,	Burnside,	do.	Ribs fractured and back bruised by being knocked down chute by a lump of coal.
15	David Wagner,	Brookside,	Laborer,	Collar bone broken by being knocked against a mine car by a mule.
18	Richard Knorr,	Brookside,	Car-oiler,	Arm broken by being crushed between mine cars while oiling them.

	20	Edwin Sobey,	Tunnel,	Laborer,	Leg broken by a prop falling on him.
	21	Thomas Neary,	Merriam,	Miner,	Rib fractured by a fall of coal.
	25	August Danbert,	Cameron,	do.	Leg crushed by a fall of coal.
	25	Anthony Bowen,	Neilson shaft,	Topman,	Leg crushed by rope steadier.
May	1	Mart Bowman,	Bear Valley,	Miner,	Ribs broken and back injured by a fall of coal.
	2	John Roditta,	Pennsylvania,	do.	Back hurt by a fall of rock.
	5	George Wilt,	Short Mountain and Lykens Valley,	do.	Leg broken by mine cars running over him.
	9	William Cattigan,	Luke Fidler,	Slate-picker,	Slightly scalded by steam.
	9	John Bloskie,	do.	do.	Slightly scalded by steam.
	9	Mark Maloney,	do.	do.	Slightly scalded by steam.
	9	Evan Thomas,	do.	Laborer,	Slightly scalded by steam.
	13	Thomas Hide,	North Ashland,	Miner,	Leg and arm broken; body injured by a rush of mountain clay filling gangway, and covering him almost.
	15	Anthony Bobolinskie,	Mt. Carmel,	do.	Left hand seriously injured by a fall of coal; amputated afterwards.
	21	William Borrower,	Morris Ridge,	do.	Ankle injured by a fall of coal.
	22	William McKeon,	Preston, No. 2,	Loader,	Hips injured by being crushed between mine cars and timber.
	22	Samuel Derr,	Burnside,	Dirt bank driver	Hips and lower limbs injured by being crushed between mule and mine car.
	23	Daniel Updegrave,	Williamstown,	Miner,	Slightly burned about the face and hands by CH. gas.
	25	Michael Madden,	Hickory Swamp,	do,	Injured about head and face by a premature blast.
June	3	Moses Deitrick,	Brookside,	do.	Back cut and bruised by a fall of slate.
	4	Michael Ague,	Big Mountain,	do.	Back broken by a fall of top coal.
	4	John Dull,	West Brookside,	do.	Small bone of leg broken by a *fall* of coal and slate.
	11	Joseph Fisher,	Mt. Carmel shaft,	do.	Two ribs broken; he fell on side of mine car.
	11	Joseph Wilcom,	Luke Fidler,	do.	Leg broken and hip dislocated by a fall of coal.
	12	Henry Kindler,	Short Mountain and Lykens Valley,	do.	Legs badly bruised by a fall of rock.
	12	Lafayette Dietrich,	Short Mountain slope,	Engineer,	Hand torn badly by the explosion of a dunlin cap.
	15	John Harbold,	Mt. Carmel,	Driver,	Small bone of leg broken by mine car jumping the track.
	15	Martin Kutkoskle,	Excelsior,	Miner,	Burned on face, neck, and hands by an explosion of a keg of powder.
	19	Samuel Tobias,	Garfield,	Slate-picker,	Right arm almost torn off by being caught by universal coupling connecting grindstone [to fan shaft.
	22	George Leonard,	West Brookside,	Miner,	Leg broken by being caught between bottom slate and prop.
	25	Paul Dick,	Hickory Ridge,	Driver,	Crushed about the head and body by being caught between mine car and side of gangway.
	27	Emanuel G. Witmer,	Lykens Valley,	do.	Arm mashed by mine cars running over it.
July	11	Edward Roshen,	North Franklin, No. 2,	Door-tender,	Head and breast bruised; caught between mine car and chute.
	14	Herman Braner,	Short Mountain and Lykens Valley,	Miner,	Arm broken by falling down a manway.
	22	Nicholas Luchinskie,	Mt. Carmel,	do.	Back injured by a fall of rock.
	29	Joseph Jamison,	Short Mountain and Lykens Valley,	Laborer,	Leg broke and cut on arm by a lump of rock bumping out on him.
	30	W. P. Cashman,	Hickory Swamp,	Miner,	Injured by a premature blast.
	31	John Evans,	Pennsylvania,	Repairsman,	Toe broken.
Aug.	5	Solomon C. Wehry,	Garfield,	Miner,	Injured by a fall of coal.
	5	John Yorges,	Pennsylvania,	do.	Hurt by a fall of rock.
	11	Patrick Dougherty, junior,	Big Mine Run,	Laborer,	Head and back hurt by a fall of bone coal.
	15	William McCoy,	Short Mountain and Lykens Valley,	Car-oiler,	Leg broken by a mine car jumping the track and jamming him.
	21	Mathias Grutleban,	Locust Gap,	Driver,	Head and breast injured; he fell off mule, and a trip of loaded cars ran over him.
	22	John Sierer,	Short Mountain and Lykens Valley,	do.	Arm broken by being caught between mine cars and platform.
	31	John Schlachls,	Excelsior,	Miner,	Hurt by a fall of coal.
	31	John Herbert,	do.	Laborer,	Injured about hips and body by being caught between mine car and schute.
Sept.	3	Martin O'Malley,	Locust Spring,	Loader,	Leg broken and bruised about the head and breast by being run over mine by car in slope.

REGISTER OF NON-FATAL CASUALTIES.—*Continued.*

DATE.	Names.	Collieries.	Occupation.	Remarks.
Sept. 10	William H. Meck,	Luke Fidler,	Miner,	Leg hurt by fall of coal.
14	Anthony Socha,	do.	do.	Burned on face, neck, and hands by CH gas.
14	John Harlaher,	Garfield,	do.	Three ribs broken by a fall of top slate.
21	Felix Strausser,	Bear Valley,	Loader,	Leg broke; a lump of coal fell on him.
25	John Hines,	Williamstown,	Laborer,	Leg cut off by jumping and falling under loaded mine cars on top of No. 3 Slope.
28	Daniel Davis,	Excelsior,	Miner,	Burned on face, neck, arms, and hands by CH gas.
28	John Jones,	do.	Laborer,	Burned on face, neck, arms, and hands by CH gas.
Oct. 1	George Fry,	Williamstown,	Slate-picker,	Leg crushed by cog wheel in breaker; amputated afterwards.
2	Richard Evans,	do.	Miner,	Injured by a premature explosion of dualin while ramming it to back of rock hole.
2	William Murray,	do.	do.	Skull fractured and otherwise injured by same explosion.
2	Frank Jennings,	do.	do.	Injured by same explosion.
2	Edward Routzaher,	do.	do.	Injured by same explosion.
10	Gurney Kissinger,	Short Mt. & Lyk's Val.,	Loco. cond'tor,	Foot mashed by being run over by locomotive.
13	Charles Wilcofskei,	Excelsior,	Laborer,	Injured by being crushed between mine car and prop.
14	Patrick McGinley,	Logan,	Miner,	Injured by a fall of coal.
16	George Taylor,	Bast,	Carpenter,	Bruised and shaken by falling about 18 feet off scaffold.
19	Daniel Jones,	Short Mt. & Lyk's Val.,	Driver,	Injured about body by being run over by mine cars.
21	Jacob Ashton,	Reliance,	Miner,	Head cut and 2 ribs broken by a fall of top coal.
24	Edward Purcell,	Hickory Ridge,	do.	Hurt by a fall of top coal.
26	Albert Polerc,	Williamstown,	Door-tender,	Seriously injured by being crushed between mine cars.
26	Jesse Lewis,	do.	Slate-picker,	Thigh bruised by a piece of slate falling on him.
29	Frank Willard,	Sterling,	Miner,	Burned on hands and face by CH gas.
29	Frank Wisiniskii,	do.	do.	Burned on hands and face by CH gas.
31	Joseph Barron,	Luke Fidler,	Fan-boy,	Fingers mashed by being crushed in fan cog wheel.
Nov. 4	Enos McPherson,	Cameron,	Driver,	Hurt about body by mine car running over him.
6	Michael Busham,	Pennsylvania,	Miner,	Knee hurt by a fall of top coal.
10	J. E. Miller,	do.	Driver,	Ankle dislocated by jumping off mine car.
10	John Keene,	Black Diamond,	Miner,	Hurt by a fall of top coal.
11	George Woffenden, Sr.,	Williamstown,	Outside laborer,	Two fingers cut off and hand badly lacerated by transmission of wire rope.
12	Reuben Campbell,	Cameron,	Repairman,	Foot badly crushed by fall of top slate.
14	Edward Brennan,	Locust Gap,	Driver,	Thigh-bone broken by being caught between mine car and door frame.
16	John Taylor,	Short Mt. & Lyk's Val.,	Miner,	Thigh and lower part of body bruised by a fall of slate.
17	George Shuster,	Locust Gap,	do.	Head cut and ribs broken by a fall of coal.
30	Thomas West,	Big Mountain,	do.	Burned on face, neck, arms, and hands by CH gas.
Dec. 4	Nicholas Mucilid,	do.	Engin'r's helper	Scalded on face, neck, and arms by hot water and steam; one of breaker boilers burst.
15	John Sheboskii,	Hickory Ridge,	Miner,	Burned by an explosion of powder.
19	Horace Mayer,	Burnside,	Loader & driver,	Knee fractured by being crushed between loaded cars.
19	William Laughlin,	Enterprise,	Miner,	Burned on body, face, neck, arms, and hands by an explosion of a keg of powder.
17	Daniel Woland,	Short Mt. & Lyk's Val.,	do.	Slightly burned by CH gas in No. 4 Slope, east counter.
17	George Plappert,	do. do.	Laborer,	Slightly burned by CH gas in No. 4 Slope, east counter.
22	John Weiser,	Hickory Swamp,	Miner,	Shoulder injured by a fall of coal.
22	Francis Schwartz,	Short Mt. & Lyk's Val.,	do.	Lower part of body injured by a fall of slate.
23	Benjamin Griffiths,	Pennsylvania,	do.	Arm broken while running away from blast.
31	Bernard Leonard,	Big Mine Run,	Dirt bank driver,	Seriously injured by being run over by dirt dumper.

TABLE V.—*Showing the grand total of employés, horses, mules, engines, pumps, boilers, and powder employed, tons of coal mined and shipped, fatal and non-fatal accidents, &c., in the Sixth Anthracite Mine District, for the year ending December 31, 1885.*

NAME OF COUNTIES AND PARTS OF COUNTIES IN THE DISTRICT.	Total number of men employed.	Total number of boys employed.	Total number of horses and mules employed.	Total number of engines and pumps employed.	Total number of boilers employed.	Total number of kegs of powder consumed.	Total number of tons of coal produced.	Total number of tons of coal shipped.	Total number of fatal accidents.	Total number of non-fatal accidents.	*Total number of times air measurements were taken.
Northumberland county,	6,187	2,305	912	329	443	65,194	2,498,818.05	2,366,476.08	21	88	.....
Schuylkill county,	1,064	604	215	49	102	5,089	534,361.10	509,097.19	9	13	.....
Columbia county,	1,351	486	163	124	166	16,594	610,582.12	581,479.01	6	8	.....
Dauphin county,	1,503	702	353	110	179	17,373	561,654.00	504,153.09	9	27	.....
Totals,	10,105	4,097	1,673	603	890	104,250	4,205,420.17	3,961,206.17	45	136	.....

*Air measurements are made once a week in almost all the collieries in my district when working, and reported to this office once a month, besides the measurements I make at times of my visit to colliery.

COMPARATIVE STATEMENT *of casualties, tonnage, and employés of the Sixth Anthracite Mining District of Pennsylvania, for years 1881, 1882, 1883, 1884, and 1885.*

YEARS.	Killed.	Injured.	Total.	Total number of employees.	Number of employees to each casualty.	Total number of tons of coal mined.	Number of tons of coal mined to each fatal casualty.	Number of tons of coal mined to each non-fatal casualty.	Ratio of tons of coal mined to each casualty.	Number of tons of coal mined to each employee.
1881, . . .	48	147	158	11,865	60.8	4,432,601.13	92,436.00	30,154.00	22,731.00	373.00
1882, . . .	44	182	195	12,973	57.4	4,588,799.04	104,290.00	25,213.00	20,304.00	353.00
1883, . . .	64	170	226	14,588	62.4	4,813,162.12	75,205.14	28,312.15	20,141.14	329.18
1884, . . .	56	174	234	15,568	67.3	4,535,051.13	80,983.01	26,063.10	19,717.12	291.06
1885, . . .	45	136	181	14,202	78.4	4,205,420.17	93,453.15	30,922.04	23,234.07	296.02
Total, .	257	809	994	69,196	326.3	22,575,035.19	446,368.10	140,665.09	106,128.13	1,643.06
Average,	51.28	81.80	199.80	13,839.20	65.26	4,515,007.4	89,273.14	28,133.2	21,225.14$\frac{3}{5}$	328.13$\frac{2}{5}$

SEVENTH DISTRICT.

Office of Inspector of Mines,
Pottsville, Pa., *March 2, 1886.*

To the Honorable J. Simpson Africa, *Secretary of Internal Affairs of the Commonwealth of Pennsylvania:*

Sir: In accordance with article two, section three, of an act approved June 30, 1885, entitled "An act to provide for the health and safety of persons employed in and about anthracite coal mines of Pennsylvania, and for the preservation of property connected therewith," I have the honor of submitting herewith my eleventh annual report as inspector of coal mines.

The report consists of the usual complement of tables with other data, and general information which may be of practical interest to all.

I sincerely regret that it becomes my duty to report an increase in the loss of life during the past year over that of the preceding year, arising from the various causes incidental to mining operations in general. However, in looking at table No. 1, it is apparent that the increase in fatal casualties has resulted from falls of coal and roof rock and slate, from which source thirteen persons lost their lives this year, while only four were killed in this manner the preceding year. Four persons were crushed to death by mine cars; one man, slipping on the ice, was thrown down a slope and killed; another person fell from a breaker roof, sustaining injuries which caused his death; one was killed by being struck with a plank which a second party let slip from his hands, and two other persons lost their lives by explosions of gas. Hence, the total death-list is eight greater than in the previous year.

Nothwithstanding this large increase in the number of deaths, it will be observed that none of these fatal accidents resulted in the death of more than one person at the time of each occurrence, and that this district was not visited by any overwhelming mine calamity.

By examining table No. 2, it will also be seen that there is an increase of twenty-six (26) in the list of non-fatal accidents, of which number fifty per cent. was due to a single accident, viz: An explosion of gas, a detailed account of which is given elsewhere in the report. Another noticeable source which augmented the list arose from explosions of blasting material, by which nine persons were injured this year, while only two were thus hurt last year.

It is also in place to state here that the territory of the district was enlarged during the last year by the addition thereto of the Brookside col-

lieries, by which means the coal tonnage of the district was increased about two hundred and ninety thousand tons. These collieries added four victims to the death-list, equal to fifty per cent. of the increase over the preceding year of fatal casualties. By looking at table No. 4, it will be still further observed that the gross output of coal for this year exceeds that of the previous year by over half a million tons; also, that the number of employés are five hundred and eleven (511) greater than that of 1884.

SAMUEL GAY,
Inspector of Mines.

TABLE No. 1.—Fatal Accidents.

Comparative statement of fatal casualties which occurred during the years 1884 and 1885.

CAUSES OF ACCIDENTS.	YEARS.	
	1884.	1885.
Explosions of fire-damp,	....	2
Falls of coal and roof,	4	13
Crushed by mine cars,	4	4
By machinery on the surface,	....	1
By machinery underground.		
Falling down shafts.		
Falling down slopes,	1	1
Breaking of ropes or chains.		
Explosions of blasting material,	2	
Miscellaneous causes,	4	2
Total number of fatal accidents,	15	23

TABLE No. 2.

Number of fatal accidents, and amount of coal produced per life lost, by the different companies and individual firms, for the year 1885.

OPERATORS.	No. of fatal accidents.	Amount of coal produced per life lost.
Philadelphia and Reading Coal and Iron Company,	13	92,980
Lehigh Coal and Navigation Company,	4	124,348
Alliance Coal Company,	2	86,109
Individual firms,	4	104,088

TABLE No. 3.—Non-fatal Accidents.

Comparative statement of non-fatal casualties, which occurred during the years 1884 and 1885.

CAUSES OF ACCIDENTS.	YEARS.	
	1884.	1885.
Explosions of fire-damp,	4	17
Falls of coal and roof,	26	21
By mine cars,	11	14
By machinery on the surface,	....	1
By machinery underground.		
Falling down shafts,		
Falling down slopes,	....	1
Breaking of ropes and chains,	....	1
Explosions of blasting material,	2	9
Miscellaneous,	18	15
Total number of non-fatal accidents,	61	79

TABLE No. 4.

Table showing amount of coal produced by different companies and individual firms, during the years 1884 and 1885, respectively.

	YEARS.	
	1884.	1885.
Amount of coal shipped,	1,679,662	2,164,815
Amount of coal sold or used at the collieries,	100,952	129,888
Total number of tons produced,	1,780,621	2,294,703

Increase, 514,082.

TABLE No. 5.

Statement showing general comparison between the years 1884 and 1885, respectively.

	YEARS.	
	1884.	1885.
Number of persons employed,	7,114	7,625
Number of tons of coal produced per life lost,	118,708	99,769.07
Ratio of employés per life lost,	474 3/5	331 3/5
Number of tons of coal produced per each person injured,	29,190	29,059 3/8
Tons of coal mined per each employé,	250.06	301 3/10
Ratio of employés per personal injury,	114 6/62	91 7/75

TABLE No. 6.

Showing number of employés, number of deaths, and ratio of same per every one thousand employés of the different companies and individual firms for 1885.

OPERATORS.	Number of employés.	Number of deaths.	Ratio of deaths per thousand employés.
Philadelphia and Reading Coal and Iron Company,	4,166	13	3.12
Schuylkill Coal and Navigation Company,	1,221	4	3.27
Alliance Coal Company,	855	2	2.26
Individual firms,	1,374	4	2.91

GENERAL CONDITION OF THE MINES.

In regard to the measures taken by the colliery officials for the preventing of accidents and loss of life, we may state that, without a doubt, their efforts to secure and keep the collieries in a safe condition have not been less during this year than in the year preceding, although there is a large increase in the list of accidents of 1885 over 1884; but this increase is due to accidents resulting from falls of coal and roof, a common danger surrounding the miner at all times. Whether the workmen were more reckless, or this danger greater than during the previous year, we are not prepared to say; however, we know that several of the victims recorded on this death-list, by a little common prudence and care on their own part, might have averted an accident. In fact, there are several sources of danger connected with mine operations as well as in many other branches of industry that the safety of the workmen, to a very great extent, depends on themselves. For instance, the constant danger of falls of coal or roof, also in handling of explosives, can be only guarded against by the constant care and judgment displayed by the workmen themselves.

Injunction.

For the protection of the lives of the employés in the Crystal colliery, operated by Joseph Brady & Co., and in our own defense, we were compelled to ask the court to restrain, by an injunction, said Joseph Brady & Co. from operating this colliery. The case was argued before His Honor, Judge Pershing, and, as is usually the case, most of the workmen employed at this mine appeared before the court and testified that the colliery was in a safe condition; but His Honor emphatically told the defendants that the injunction would be continued, and a master appointed to take testimony in the case.

The following is the master's report to the honorable court:

Crystal Colliery.

The report of Seth W. Geer, Esq., master in the case of Mine Inspector Gay *vs.* Joseph Brady, was filed in court. The master finds that the inspector was right in closing Crystal colliery, which the defendant was operating. In accordance with his recommendations, the injunction was dissolved on the following conditions: *First*, That the defendant furnish an adequate supply of pure air, as provided by the act of Assembly. *Second*, That the gangway on the "Mammoth" and "Four Foot" veins be driven eastwardly as far as it is proposed at present to take out coal, and that the pillars be removed only in robbing back from the eastern terminus. *Third*, That whenever the gangway on the Mammoth vein shall have advanced through a pillar of coal of more than thirty feet, said gangway shall not be further advanced until it is ascertained that there is no dangerous opening below said gangway. *Fourth*, That during the working a proper and safe second outlet shall be kept open through which persons may escape to the surface. *Fifth*, That the defendant pay the costs of these proceedings.

SUDDEN OUTBURST OF GAS AT THE OTTO COLLIERY SEPTEMBER 9, 1885.

Under this heading, arises one of those phenomena which, in our judgment, requires more than ordinary notice or insight, from the fact that its source is a concealed one, and when the gas bursts forth, it is generally with overwhelming violence, (for seldom are the ventilating currents found to be sufficient to cope with the dense volume of explosive mixture evolved,) making it one of the greatest dangers encountered by those engaged in mining. It is a well-known fact that hundreds of colliery employés are destroyed, annually, by this uncontrollable element. Notwithstanding this, however, we are of the opinion that many of these disastrous explosions have been charged to sudden outbursts of gas, when, in many instances, if the facts of the case could have been brought to light, the cause would have been found chargeable to the neglect or ignorance of those officials who were superintending the mining operations, the theory of sudden outburst having been advanced to conceal their ignorance or guilt.

But on the other hand, the public and the press are always ready to go to extremes in passing judgment, condemning the unfortunate mine official in charge of the place where the calamity occurred, and frequently without even waiting to ascertain whether the accident was really due to willful neglect, or whether it was wholly unavoidable and beyond human control, a class of mishaps to which sudden outbursts of gas belong.

Hence it is very important, before passing judgment on questions of such serious character, that the subject should be carefully investigated, and the responsibility placed where it justly belongs.

We are willing to confess that in the case of this accident at Otto colliery, what we have said in regard to public sentiment is applicable to ourselves, because, when the accident was reported to us by one of the colliery offi-

cials, who stated that it was the result of a sudden outburst of gas, we intimated our doubts to him, and at the same time told him that we believed many explosions were charged to sudden outbursts that were due to neglect or ignorance. However, after we had investigated the matter and found that over twenty-two (22) feet of the solid face of coal had been displaced, we were fully convinced that there had been a fearful outburst of gas over which human skill had no control; and we are pleased to admit that in this case our suspicion of neglect had not been correct.

The Otto colliery is one of the oldest and one of the most extensive in this region. The main openings consist of three slopes, but those to which we particularly desire to direct the attention of the reader are slopes marked A and B on sketch No. 1, sunk on the Holmes vein and Primrose vein, respectively, and connected at the different lifts by means of tunnels. Slope A is sunk down fifteen hundred feet, on an angle of 35° south dip; the last three hundred feet are sunk in the solid, and the same distance below the old workings on the Mammoth and Primrose veins. Three hundred feet of gangway west, from which point two tunnels (marked E and F on sketch) were driven, one cutting the Primrose vein and the other the Mammoth vein.

The work under way at the time of the outburst, which caused the accident, was the driving up of an air-way (G) in the Mammoth seam to be connected with the level above, thereby establishing a permanent air-course.

From the time of the commencement of this airway, considerable trouble was encountered from the large quantities of gas given off, quite sufficient at times to charge the ventilating column to an almost explosive point notwithstanding that the current circulating through the tunnel was about five thousand cubic feet per minute. The parties engaged in driving the airway were composed of two men—a miner and a laborer—on each shift. In order to better secure the safety of these men, as well as the mine workings, no open lights were used, and a special fire boss was employed on the night shift, whose duties were confined to this one section of the mine.

In the morning, about one o'clock, the men noticed that the face of coal was working more than usual, and at the same time indications began to show themselves of some great force which was disturbing the solid coal. The miner, fearing that the face would rush out, sent the laborer down to the tunnel, (where the fire-boss was standing,) thinking as he afterward stated, that if a large volume of gas should suddenly be discharged while he was alone in the air way, his chances to make his escape down to the tunnel would be much better. This conclusion was not reached a minute too soon, for the laborer had just gotten down into the tunnel by the side of the fire-boss, when both heard a rushing noise similar to escaping steam, and immediately thereafter they saw the miner tumbling down into the tunnel followed by a rush of coal and gas. The three men began to retreat toward the tunnel mouth, the fire-boss with his safety-lamp in hand,

watching the progress of the volume of gas as they moved back, the air current having been reversed by the force of the body of gas when it rushed out. This condition of affairs continued thus until the tunnel filled with gas for a distance of two hundred and twenty-five feet back from the face, at which point the gas began to recede. According to the testimony of the men, it was about fifteen minutes from the time when the outburst occurred until the gas again receded to the face of the tunnel. Returning, the men found the air-way impassable from the loose coal carried down by the rush.

About twenty minutes after the occurrence, and while the men were discussing the event and the miner's escape, they were again startled by the shock of an explosion, but did not think it was the gas that had just passed away from them; but upon investigation, they found such to be the case, that one person had been killed and twelve more men injured, but fortunately none of the latter were seriously hurt, and but a small amount of damage done to the mine.

It is at this point of the subject that any doubt of the accident resulting from a sudden outburst of gas would be likely to arise, when taking into consideration the large volume of explosive mixture suddenly evolved, and compare it with the small amount of destruction caused by the explosion. If the whole body of gas had exploded, (which result would be very reasonable,) then the statement that a portion of it might have been fired without setting off the whole body would seem incredible, and it naturally raised doubts in our own mind previous to investigating the matter, but we found it to be a fact, that only a portion of the whole volume had exploded. We base our belief on the following facts: First, the quantity of gas given off was not less than fifty thousand cubic feet; hence, had such a volume exploded, the destruction to life and property would have been fearful. In fact, not a person in the mine would have escaped, and the cause of the accident would have been much more difficult to explain. Second, notwithstanding the large quantity of gas given off when the explosion took place, the damage done to the mine was comparatively small; in fact, its force and effect were confined to the point where it had been ignited. Therefore, we are of the opinion that the main body of the explosive mixture had passed off through the regular air-channel, (K K;) and we furthermore believe that the gas which exploded was the portion which filled that part of the gangway (I) between the head of the tunnel (H) and door (X,) a distance of about twenty-five (25) feet.

The fatal accident occurred in the following manner: The unfortunate men were working on the night shift, timbering the workings east of the door, (X.) The men had finished their work for the night, and were on their way to the foot of the slope. Instead of walking, the twelve men got into a car, and rode out with the driver, Linn, who stood on the car bumper to drive his mule. When they arrived at the door (X) he stopped the mule

and opened the door, when the gas pent up between the door and the tunnel (H) rushed through, and, being ignited by his naked light, instantly exploded, killing him, and burning all the men in the car, but none of them seriously. We believe that if the men had arrived at that door a few moments earlier, the whole body of gas would have been fired with more disastrous results; but if they had gotten there a few moments later, there would have been no explosion, because by that time a natural diffusion would have taken place, or the gas would have escaped and passed the door through leakages.

Let us again consider the probable quantity of gas evolved by this sudden outburst. We have said elsewhere, not less than fifty thousand cubic feet, but without doubt the quantity was much greater; however, we do not desire to convey the idea that we have sufficient data to fix a given quantity with any degree of certainty. Nevertheless, we have taken the following basis for our calculations, upon the testimony of the miner, laborer, and fire-boss, which, in our opinion, was verified by facts connected therewith. Under oath, these men stated that the gas filled the tunnel back from the face for a distance of two hundred and twenty-five feet, which length multiplied by the area, seventy-five feet, would equal sixteen thousand eight hundred and seventy-five cubic feet. But it must be borne in mind that, during this time, a greater quantity of gas was passing off in the same ratio as that of the ventilating current previous to the outburst; or, probably, we may arrive at a more correct conclusion by taking the velocity of the current, and multiplying by the time it took to fill up the tunnel until it receded; hence, if we take this as a basis, we have these results: Quantity of air in circulation, five thousand cubic feet per minute, and (according to the testimony of the men) the time it took to fill the tunnel, and recede fifteen minutes, the quantity would be seventy-five thousand cubic feet. To many this quantity will probably appear large, but it is quite evident, beyond doubt, that the volume of the explosive mixture, when it reached the fatal point, was much greater than the above given amount. Notwithstanding that this body had traveled fifteen hundred feet, and on its way met and intermingled with two other air-currents, which increased the total quantity of air circulating through the tunnel (H) to nearly twenty thousand cubic feet per minute, yet it is very evident that the whole volume must have been charged to an explosive point; had it not been so, there could have been no explosion.

Hence, it appears, first, that the gas was in a pure state, as it passed from tunnel (E) to the upper tunnel, (H,) and second, that it was only when it had met and intermingled with much larger volumes of air that it reached an explosive point. Therefore, we are inclined to believe that not less than two hundred thousand cubic feet of inflammable mixture passed through the upper tunnel, (H.)

IMPROVEMENTS MADE DURING THE YEAR.

Brookside Colliery.

On the twenty-fifth of last April, the breaker at the Brookside colliery was destroyed by fire, and in ninety-four days after its destruction, a new breaker was constructed sufficiently to allow the first shipment of coal to be made therefrom on that date.

The capacity of this new concern is greater, and its mechanical devices for the handling and preparing of coal more complete than any breaker yet built in the Schuylkill coal field.

In order to make this immense structure as durable and fire-proof as possible, iron has been very extensively used, the entire roof and sides of the building being covered with sheet-iron, while the bottoms of the coal-bins are laid with cast-iron plates, instead of the usual method of covering planks with sheet-iron. This is the first case in which iron has been so extensively used in breaker construction.

Notwithstanding the great amount of mechanical skill and labor necessarily required in the construction of the machinery in a structure of this kind, the Philadelphia and Reading Coal and Iron Company's foundries and machine shops in Pottsville, Pa., were equal to the emergency. This becomes cognizant when we remember in what remarkably short time this work was accomplished. Although the work was necessarily done in haste, yet we may venture to state, that the quality, material, and workmanship displayed in the building of this breaker, has not been equaled by any structure of the kind in the region.

We are indebted to S. B. Whiting, Esq., general manager of the Philadelphia and Reading Coal and Iron Company, of Pottsville, for the following figures, showing the amounts of the several materials used in the building of this breaker, viz:

White pine, yellow pine, and oak,	383,800 square feet.
Cast-iron,	589,300 pounds.
Wrought iron,	170,000 pounds.

Chamberlain Colliery.

Thompson, Hiatt & Co. A new slope has been sunk to a depth of three hundred feet, and a breaker and other general improvements erected, having a capacity varying from one hundred and fifty to two hundred tons of coal per day.

Newtown Colliery.

Diggles, Miesse & Co. A new breaker, which had been commenced in 1884, was completed early this year, but on account of some financial difficulty between the operators and employés, very little work has been done at this colliery.

Lehigh, No. 8, Colliery.

The most important undertaking in the way of improvements during this year, and one deserving special notice, is the new shaft sunk at this colliery by the Lehigh Coal and Navigation Company, the shaft and the connecting tunnel, air-ways, &c., driven during that time. The shaft is sunk to a depth of eight hundred and twenty-five feet, and the tunnel extends from the bottom of the underground trial slope to the foot of the shaft, and is five hundred and twenty feet long; this slope, however, is sunk three hundred feet below the present shaft level. Sketch No. 3, accompanying the report shows these various openings and their relation to each other, and also shows the method employed in opening up or developing and working this large body of coal in the Mammoth vein. Sketch No. 4, of the report, is a cross-section showing the main avenues for transportation of coal and for ventilating the mines, which, it will be noticed, are being driven on an underlying seam, viz: The Skidmore vein. From these avenues or gangways cross-cuts are being driven at regular intervals through the dividing measures, at an angle of 35°, to the bottom of the Mammoth vein, where the breasts on that vein will be opened.

The old adage, that "necessity is the mother of invention," is quite applicable to this case, because if it had not been for the difficulties and expense previously encountered in the working of this colliery, in maintaining the gangways and air-ways and keeping them in proper condition, the main openings in this new operation would have been driven on the Mammoth instead of the Skidmore vein. But by this new plan, the Skidmore vein will remain intact, with the exception of the main gangways and air-ways, and thus avoid the great amount of unnecessary expense which would have been met with in the old system of having the gangways and air-ways on the Mammoth vein while working that seam of coal.

Notwithstanding the remarkably short time in which this shaft was sunk, (it was finished in about fifteen months,) we do not hesitate in stating that there is not a more solid or a finer piece of work of its kind in the country. We may furthermore venture to say, that there has not been a piece of work of the same magnitude done, where such precautionary measures have been adopted for the preservation of life and limb of those employed, as at this colliery. We cannot produce any better evidence to show how strictly the laws were enforced than the fact that this eight hundred and twenty-five feet of shaft were sunk without one serious injury to any of the numerous employés, for which the officials of the company, particularly Mr. Evans and the men having charge of the sinking, deserve the highest commendation.

We are indebted to W. D. Zehner, general superintendent of the Lehigh Coal and Navigation Company for the accompanying plan, Nos. 3 and 4.

DESCRIPTIVE LIST OF FATAL ACCIDENTS.

Accidents Resulting from Explosions of Fire-Damp.

Accident No.—September 8. John Linn, a driver, aged eighteen years, was killed by an explosion of fire-damp at Otto colliery.

Accident No. 20.—December 20. Jacob G. Boyer, a fire-boss, aged twenty-nine years, was fatally burned by an explosion of fire damp at Kaska Williams' colliery.

At the time of the accident, the unfortunate man was making his usual morning examinations to see that the mine was in a safe condition before the colliery employés entered. It appears, that in all previous examinations but very little gas had been generated; in fact, Boyer stated just before his death, that before the explosion he had never found any gas in this place, so that we are fully convinced that on this occasion he entered the place with his open light, believing that the place did not generate explosive gas, and by his own recklessness lost his life.

Accidents Resulting from Falls of Coal and Roof.

Accident No. 1.—February 3. James Hubert, a driver, aged sixteen years, was instantly killed, at Lincoln colliery, by a piece of top rock falling on him while he was riding along the gangway on the hind end of a trip of loaded cars.

Accident No. 3.—February 21. Henry Smith, a miner, aged fifty years, was killed, at Palmer Vein colliery, by a piece of coal rolling off the side of a chute while he was going up to the face of the breast in which he worked, and crushing him to death.

Accident No. 4.—February 26. Charles Marker, a miner, died from injuries received, at New Lincoln colliery, by a sharp piece of slate falling on his leg and nearly severing it from his body.

Accident No. 9.—July 18. Henry Gottshall, a miner, aged fifty-five years, was killed at the face of his working place, in Otto Colliery, by a fall of top slate, resulting from insufficient propping.

Accident No. 11.—July 24. Isaac Franz, a miner, aged fifty-five years, was killed by a fall of slate at the face of a breast in which he was working at the Brookside colliery.

Accident No. 12.—August 24. Patrick Brackerty, a miner, aged sixty years, died from injuries received, at New Lincoln colliery, by a piece of slate falling upon his leg and nearly cutting it off.

Accident No. 13.—August 28. John McVeigh, a miner, aged thirty-five years, was killed at Thomaston colliery, by a piece of coal crushing him against a prop in a manway, as he was trying to pull it off the side.

Accident No. 14.—Charles Green, a miner, aged thirty-two years, was killed by a fall of coal and slate at West Brookside colliery.

This man was loading a car at the face of the gangway in which he worked, when a piece of the lower side of the gangway fell off and crushed him against the car, killing him instantly.

ACCIDENT No. 16.—September 9. David James, a miner, aged fifty-five years, was killed, at the Lehigh, No. 8, colliery, by a body of coal rolling on him from the face of a seam of coal from which the surface ground had been removed or stripped.

ACCIDENT No. 17.—October 7. Henry Reinoehl, a miner, died from injuries received, at New Lincoln colliery, by a piece of coal that fell on him from the high side and near the face of a gangway in which he worked.

ACCIDENT No. 18.—November 25. Joseph Patten, a miner, aged forty-five years, was killed by a fall of roof in his working-place at Phœnix Park, No. 3, colliery.

This accident, if it may be so called, was the result of pure recklessness. The top slate had been working for some time before the fall took place, and Patten and his assistant were down on the gangway listening to it. Notwithstanding this warning which the top slate was giving, Patten determined to go into the face of the breast to bring out some of his tools. He reached the face without any mishap, but when about to return to the gangway, the top slate fell upon him and crushed him underneath it.

ACCIDENT No. 21.—December 21. John O'Brien, a miner, aged twenty-years, was fatally injured by a fall of roof at the face of his breast in the Phœnix Park, No. 3, colliery.

ACCIDENT No. 22.—June 11. Isaac Morgan, a miner, aged forty-four years, was fatally injured, at West Brookside colliery, by a fall of slate and coal.

Accidents Caused by Mine Cars.

ACCIDENT No. 2.—February 5. George Keich, aged sixteen years, a driver at Lehigh, No. 10, colliery, was crushed to death at that place by a trip of loaded cars which he was bringing to the bottom of the slope.

From the testimony given at the investigation of this accident, it appears that a door-tender whose duty it was to tend also a switch located near the door where the accident occurred, failed on this occasion to place the switch in its proper position. The driver, coming out with his trip, saw that the switch was wrong, and attempted to change it, but in so doing he was caught by the cars and killed.

ACCIDENT No. 7.—April 20. Charles Christ, an outside laborer, was fatally injured, at the Old Lincoln colliery, by being crushed between two loaded cars, while attempting to uncouple them when in motion.

ACCIDENT No. 8.—June 23. David Thomas, a driver, aged eighteen years, died from injuries received at the Lehigh, No. 8, colliery, by being crushed between a car and a gangway prop.

ACCIDENT No. 19.—November 25. John F. Boyle, aged thirty-four years, a repairman at the Lehigh, No. 8, colliery, was squeezed to death between the gangway timbers and a car.

Accidents Caused by Machinery.

ACCIDENT No.—.February 6.—John A. Kreise, a slate-picker, aged four-

teen years, died from injuries received at West Brookside colliery breaker by being caught in the coal elevator.

Falling Down Slopes.

Accident No. — February 14. James Nolen, a repairman, aged fifty-five years, was fatally injured at Mine Hill Gap colliery by falling down the slope.

The deceased, in company with another man, was engaged in cutting the ice from the slope road, and although the angle of the slope varied from 40° to 50°, and the condition of the road very slippery and dangerous, yet these men took no extra precaution to secure their safety, which they might have done by placing a couple of planks across the slope, resting the ends on the slope timbers, and moving them alternately as they advanced in their work up the slope. They had cut the ice about forty yards up the slope, when suddenly Nolen slipped, and fell back down the slope, receiving injuries which caused his death.

Miscellaneous Accidents.

Accident No. — March 14. Benjamin Housekuichk, aged twenty-two years, a carpenter, working at the Eagle Hill colliery, died from injuries received while engaged in removing the roof from the colliery breaker.

He was carrying some of the timber off the roof, when he fell from the plankway and was fatally hurt.

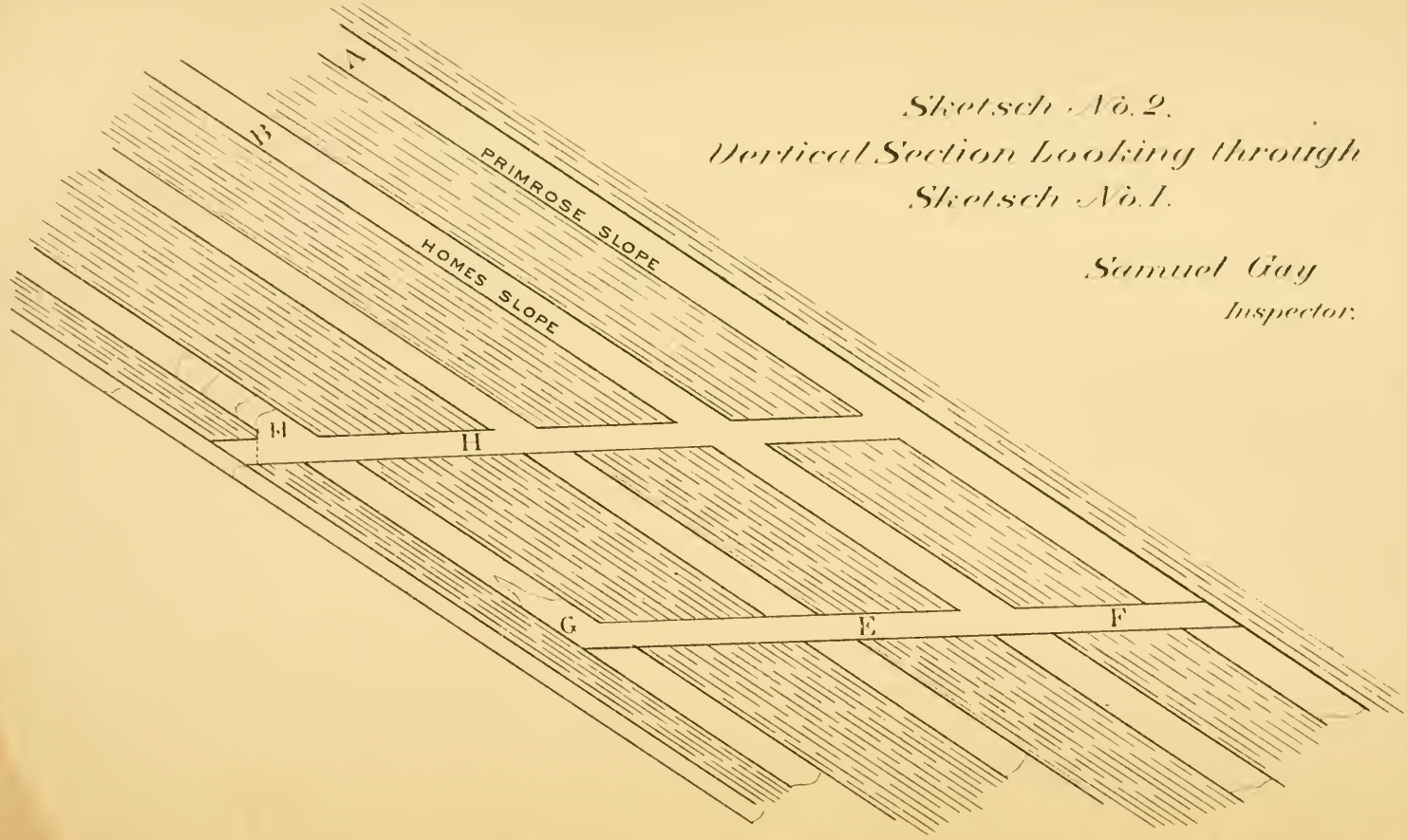
Accident No. — July 29. William Parry, aged fifty-one years, a repairman, at New Lincoln colliery, was instantly killed by being struck with a plank.

This peculiar accident happened in the following manner: Parry and several other workmen were in the pump-way, making preparations for putting in a new pump column. Notwithstanding that the angle of the pump-way was 50°, the men divided into two separate bodies, one party working above the other. By some oversight, the uppermost party failed to make secure a plank which they had just taken off the pump-way, although they stated that they had spiked it temporarily to an adjoining prop. But the plank became loose, and was precipitated down the pump-way, and, striking Parry, who was working among the party below, killed him instantly.

RECAPITULATION.

Number of employés inside,	4,550
Number of employés outside,	3,075
Number of persons killed inside,	20
Number of persons killed outside,	3
Number of persons seriously injured inside,	68
Number of persons seriously injured outside,	12
Tons of coal shipped,	2,164,815
Estimated amount used at mines,	129,888

Number of steam-boilers in use,	615
Number of boiler explosions,	
Number of breakers in operation,	38
Number of surface slopes in use,	33
Number of shafts in use,	5
Number of underground slopes in use,	6
Number of water-level openings in use,	14
Number of kegs of powder used,	44, 380
Number of mine locomotives in use,	8



Sketsch No. 2.
Vertical Section Looking through
Sketsch No. 1.

Samuel Gay
Inspector.

TABLE I.—*Showing location of collieries in the Seventh Anthracite Mine District.*

Name of Colliery.	Name of Operator.	Location—County.	Name of Superintendent.	Post-Office Address.
Beachwood,	Philadelphia and Reading Coal and Iron Co.,	Schuylkill,	S. B. Whiting,	Pottsville.
Brookside,	do do. do.	do.	do.	do.
Eagle,	do. do. do.	do.	do.	do.
East Franklin,	do. do. do.	do.	do.	do.
Eagle Hill,	do. do. do.	do.	do.	do.
Forestville,	do. do. do.	do.	do.	do.
Glendower,	do. do. do.	do.	do.	do.
Kalmia,	do. do. do.	do.	do.	do.
Lincoln, Old,	do. do. do.	do.	do.	do.
Lower Rausch Creek,	do. do. do.	do.	do.	do.
Middle Creek Shaft,	do. do. do.	do.	do.	do.
Otto,	do. do. do.	do.	do.	do.
Phœnix Park, No. 3,	do. do. do.	do.	do.	do.
Pottsville Shafts,	do do. do.	do.	do.	do.
Pine Forest,	do. do. do.	do.	do.	do.
Richardson,	do. do. do.	do.	do.	do.
Swatara,	do. do. do.	do.	do.	do.
Thomaston,	do. do. do.	do.	do.	do.
Wadesville,	do. do. do.	do.	do.	do.
Lehigh, No. 8,	Lehigh Coal and Navigation Company,	do.	W. D. Zehner,	Lansford, Carbon county.
Lehigh, No. 10,	do. do. do. do.	do.	do.	do. do.
Lehigh, No. 11,	do. do. do. do.	do.	do.	do. do.
Lehigh, No. 12,	do. do. do. do.	do.	do.	do. do.
Lehigh, No. 13,	do. do. do. do.	do.	do.	do. do.
Kaska Williams,	Swartz & Oliver,	do.	Thomas Oliver,	Tamaqua.
Palmer Vein,	Alliance Coal Company,	do.	W. D. Zehner,	Lansford, Carbon county.
Individual Operations.	do. do.	do.	do.	do. do.
Middle Lehigh,	Middle Lehigh Coal Company,	do.	Morgan Price,	Mahanoy City.
New Lincoln,	Levi Miller & Co.,	do.	D. J. Lewis,	Tremont.
Herbine,	J. K. Sigfried,	do.	Matthew Beddow,	Minersville.
Ellsworth,	John R. Davis,	do.	John R. Davis,	Broad Mountain P. O., New Castle.
East Lehigh,	Mitchell & Shepp,	do.	Joseph Mitchell,	Tamaqua.
Monitor,	John Denning,	do.	William Dennings,	St. Clair.
Crystal,	Joseph Brady,	do.	Jacob Brady,	Broad Mountain P. O., New Castle.
Kelchline,	P. O'Connor,	do.	Thomas O'Connor,	Heckscherville.
Pine Dale,	Slemmer & Co.,	do.	Mark Bowman,	Middleport.
Diamond,	John Lawrence,	do.	John Lawrence,	Minersville.
Peach Mountain,	Morgan Williams,	do.	Morgan Williams,	do.
Ebony,	Bowman & Co.,	do.	John Bowman,	St. Clair.
Newtown,	Miesse & Diggles,	do.	George Morgan,	New Town.
Chamberlain,	Thompson, Ryatt & Co.,	do.	Daniel Thompson,	St. Clair.
West Lehigh,	Dunkelberger & Co.,	do.	Peter Young,	Tamaqua.
Repplier,	John Quinn,	do	John Quinn,	St. Clair.
Hooker,	Thomas Wren & Co.,	do.	Thomas Wrenn,	do.

TABLE II.—*Showing character of coal production, number of employés, days employed, casualties, &c., in the Seventh Anthracite Mine District.*

COLLIERIES.	Operators.	Character of coal, anthracite or semi-anthracite, bituminous or semi-bituminous.	Drift, slope, or shaft.	Number of inside workmen.	Number of outside workmen.	Total employees.	Number of days worked inside.	Number of days worked outside.	Number of horses and mules.	PRODUCTION. Number of kegs of powder used.	PRODUCTION. Number of tons shipped.	CASUALTIES. Killed inside.	CASUALTIES. Killed outside.	CASUALTIES. Injured inside.	CASUALTIES. Injured outside.	CASUALTIES. Total killed and injured.
Beachwood,	Phila. and Reading C. & I. Co.,	Anthracite,	Slope,	45	39	84	85	85	6	450	13,856	. .	. .	3	1	4
Brookside, West,	do. do. do.	do.	Slope,	319	296	615	260	260	124	3,650	290,471	3	1	7	3	14
Eagle,	do. do. do.	do.	Slope,	79	56	135	232	232	15	625	45,904	. .	. .	4	. .	4
East Franklin,	do. do. do.	do.	Slope,	50	27	77	81	81	9	95	5,590					
Eagle Hill,	do. do. do.	do.	Shft & slope	311	201	512	220	220	40	1,790	142,026	. .	1	3	. .	4
Forestville,	do. do. do.	do.	Slope,	suspended.												
Glendower,	do. do. do.	do.	Slope,	208	121	329	145	145	33	1,325	45,671	. .	. .	2	. .	2
Kalmia,	do. do. do.	do.	Drift,	225	111	336	251	251	29	4,525	86,571	. .	. .	5	1	6
Lincoln, (old,)	do. do. do.	do.	Slope,	263	147	410	239	239	55	2,750	96,368	2	. .	1	. .	3
Mine Hill Gap,	do. do. do.	do.	Slope,	suspended.								1				1
Middle Creek Shaft,	do. do. do.	do.	Shaft,	174	98	272	241	241	27	850	70,406	. .	. .	2	. .	2
Otto,	do. do. do.	do.	Slope,	183	118	301	199	199	32	875	55,129	2	. .	15	. .	17
Phœnix, No. 2,	do. do. do.	do.	Slope,	suspended.												
Phœnix, No. 3,	do. do. do.	do.	Slope,	151	79	230	234	234	30	1,735	55,507	2	. .	3	. .	5
Pottsville Shafts,	do. do. do.	do.	Shaft,	suspended.												
Pine Forest,	do. do. do.	do.	Shaft,	suspended.												
Rausch Creek,	do. do. do.	do.	Slope,	suspended.												
Richardson,	do. do. do.	do.	Slope,	187	137	324	236	236	34	3,020	102,431	. .	. .	1	. .	1
Swatara,	do. do. do.	do.	Slope,	suspended.												
Thomaston,	do. do. do.	do.	Slope,	332	188	520	238	238	66	4,424	130,392	1	. .	2	. .	3
Wadesville,	do. do. do.	do.	Shaft,	. . . .	23	23	. . . .	. . . .	2							
Total P. & R. C. & I. Co.,				2,527	1,641	4,168	2,681	2,681	502	26,114	1,140,322	11	2	48	5	66
Lehigh, No. 8,	Lehigh Coal and Navigation Co.,	do.	Slope,	191	160	351	240	240	52	240	123,379	2	1	6	3	12
Lehigh, No. 10,	do. do. do.	do.	Slope,	186	163	349	236	236	52	126	148,876	1	. .	4	1	6
Lehigh, No. 11,	do. do. do.	do.	Slope,	177	165	342	245	245	44	1,260	110,428	. .	. .	3	2	5
Lehigh, No. 12,	do. do. do.	do.	Slope,	114	65	179	240	240	21	1,320	86,556					
Total Lehigh C. & N. Co.,				668	553	1,221	961	961	172	2,946	469,239	3	1	13	6	23

Kaska Williams,	Alliance Coal Company,	do.	Shaft,	299	181	480	214	214	24	2,465	108,201	1	. .	4	. .	5
Palmer Vein,	do. do.	do.	Slope,	219	156	375	156	156	26	1,650	54,269	1	. .	3	1	5
Total Alliance Coal Co.,				518	337	855	370	370	50	4,115	162,170	2	. .	7	1	10
Crystal,	Joseph Brady,	do.	Slope,	15	13	28	140	140	9	102	4,604					
Diamond,	John Lawrence,	do.	Drift,	7	7	14	277	277	2	76	3,000					
Ellsworth,	John R Davis,	do.	Slope,	25	16	41	211	211	5	375	13,047					
East Lehigh,	Mitchell & Shepp,	do.	Drift,	12	15	27	227	227	4	140	4,270					
Ebony,	Bowman & Co.,	do.	Drift,													
Herbine,	J. K. Sigfried,	do.	Drift,	125	60	185	229	229	4	1,248	35,203					
Keichline,	P. O'Conner,	do.	Drift,	7	9	16	225	225	3	350	5,800					
Monitor,	John Denning,	do.	Slope,	19	9	28	190	190	2	265	4,599					
Middle Lehigh,	Mill Creek Coal Company,	do.	Slope,	289	159	448	182	182	51	3,901	126,054					
New Lincoln,	Levi Miller & Co.,	do.	Slope,	210	175	385	259	259	. . .	3,950	154,307	4	. .	2	. .	6
Newtown,	Miesse & Diggles,	do.	Drift,													
Pine Dale,	Slemmer & Co.,	do.	Slope,	39	24	63	200	200	. . .	300	9,175					
Peach Mountain,	Morgan Williams,	do.	Slope,	12	7	19	75	75	. . .	75	975					
Reppller,	John Quinn,	do.	Drift,	13	6	19	200	200	2	98	4,810					
West Lehigh,	Dunkleberger & Co.,	do.	Drift,	8	6	14	120	120	. . .	4	2,006	. .	. .	1	. .	1
Lehigh, No. 13,	Swartz, Oliver & Co.,	do.	Drift,	32	22	54	199	199	8	245	20,225					
Hooker,	Wren & Lessig,	do.		24	16	40	162	162	6	73	4,669					
				837	544	1,381	2,896	2,896	96	11,205	392,784	4	. .	3	. .	7
Grand totals,				4,550	3,075	7,625	6,910	6,910	820	44,380	2,164,815	20	3	68	12	106
Estimated amount of coal	used at mines,			. . .	. . .	. . .	. . .	. . .	. . .	. . .	129,888					
Total output,				. . .	. . .	. . .	. . .	. . .	. . .	. . .	2,294,703					

TABLE III.—*Names of collieries in operation and coal mined in Pottsville Division of the Mining District of Schuylkill for the years 1881, 1882, 1883, 1884, and 1885.*

Names of Collieries.	Location of Collieries.	Operators.	1881.	1882.	1883.	1884.	1885.
1. Beachwood,	Mt. Laffee,	Phila. and Reading Coal and Iron Co.,	30,706.17	31,925.09	4,897.07	195.00	13,856.19
2. Colket,	Donaldson,	do. do.	43,221.15	31,484.08	35,661.17	33,369.09	not working
3. East Franklin,	Upper Rausch Creek,	do. do.	19,159.07	25,051.19	13,058.02	93.00	5,590.13
4. Eagle Hill Shaft,	Eagle Hill,	do. do.	70,084.12	69,811.10	73,872.17	82,294.10	142,026.10
5. Eagle,	St. Clair,	do. do.	49,361.19	28,594.07	28,426.09	34,319.07	45,901.06
6. Forestville,	Forestville,	do. do.	.....	11,443.00	39,213.18	37,033.13	suspended.
7. Glendower,	Glen Carbon,	do. do.	51,465.18	1,220.12	23,479.02	41,542.15	45,671.11
8. Kalmia,	Orwin,	do. do.	83,167.00	200,100.05	169,403.08	72,205.16	86,571.05
9. Lincoln,	Tremont township,	do. do.	146,899.17	165,678.07	176,673.17	69,155.05	96,368.03
10. Mine Hill Gap,	Minersville,	do. do.	48,902.09	51,540.09	66,988.16	68,596.08	suspended.
11. Middle Creek Shaft,	Middle Creek,	do. do.	.....	4,872.00	43,967.16	58,856.03	70,406.08
12. Otto,	Branchdale,	do. do.	55,905.05	11,422.09	32,082.05	56,078.04	55,129.09
13. Phœnix Park, No. 2,	Phœnix Park,	do. do.	33,011.00	32,963.18	8,859.13	abandoned.	
14. Phœnix Park, No. 3,	do.	do. do.	22,163.01	30,676.03	38,031.12	37,642.08	55,507.01
15. Pottsville Shaft,	Pottsville,	do. do.	16,478.08	42,625.19	59,562.15	12,458.06	suspended.
16. Pine Forest,	St. Clair,	do. do.	41,549.12	32,468.02	60,023.10	31,090.06	suspended.
17. Rausch Creek,	Tremont township,	do. do.	85,382.03	62,682.17	74,503.12	3,754.06	suspended.
18. Richardson,	Glen Carbon,	do. do.	58,388.16	66,381.00	66,248.15	72,498.02	102,431.05
19. Swatara,	Swatara,	do. do.	53,124.01	41,725.05	3,141.05	not shipping	suspended.
20. Thomaston,	Heckscherville,	do. do.	82,975.19	70,784.06	93,840.02	100,229.00	130,392.06
21. Wadesville Shaft,	Wadesville,	do. do.	110,874.08	15,233.04	5,240.10	29,554.14	
22. Lehigh, No. 8,	Coal Dale,	Lehigh Coal and Navigation Company,	140,365.11	107,423.18	93,299.04	107,858.00	123,379.03
23. Lehigh, No. 10,	do.	do. do.	83,463.04	116,259.10	107,973.18	133,890.15	148,876.02
24. Lehigh, No. 11,	do.	do. do.	81,525.10	76,955.00	83,430.19	102,133.14	110,428.17
25. Lehigh, No. 12,	do.	do. do.	.....	.....	48,793.00	89,456.11	86,556.03
26. Lehigh, No. 13,	Tamaqua,	Swartz, Oliver & Jones,	.....	.....	12,847.00	33,817.00	20,235.14
27. Kaska William,	New Philadelphia,	Alliance Coal Mining Company,	.....	.....	19,519.00	52,300.07	108,201.07
28. Palmer Vein,	do.	do. do.	28,000.00	35,596.00	48,292.07	61,812.05	51,269.07
29. Middle Lehigh,	New Boston,	Mill Creek Coal Company,	153,924.11	146,422.01	135,429.13	100,600.08	126,054.12
30. New Lincoln,	Tremont township,	Levi Miller & Co.,	.....	.....	.....	49,080.11	151,307.05
31. Herbine,	Minersville,	J. K. Sigfried,	21,132.02	6,245.03	19,298.05	37,730.08	35,203.12
32. Ellsworth,	New Castle,	John R. Davis,	11,933.02	15,036.00	12,884.00	12,149.00	13,047.00
33. St. Clair, (now Hooker,)	St. Clair,	Atkinson & Lessig,	3,524.17	4,858.05	4,882.02	3,136.01	4,669.00
34. Sharp Mountain,	Pottsville,	Thomas Wren,	2,510.00	1,265.10	794.00	66.10	
35. Oak Hill,	Mt. Laffee,	do.	.....	320.10	3,319.01	6,725.18	
36. East Lehigh,	Tamaqua,	Mitchell & Shepp,	10,116.08	8,461.02	2,096.13	3,805.07	4,270.14
37. Greenwood,	do.	Andrew Raube,	2,776.00	2,480.00	2,570.00	749.10	
38. Monitor,	Wadesville,	John H. Denning,	1,854.07	2,840.00	5,611.00	6,500.00	4,599.00
39. Jugular,	New Castle,	Jacob S. Hepner,	869.01	1,049.17	1,099.04	1,129.00	
40. Crystal,	do.	Joseph Brady,	.....	5,149.11	3,900.00	5,977.04	4,604.13
41. W. C. Big Diamond,	Wolf Creek,	James F. Donohue,	8,000.00	5,860.00	2,130.16	1,567.00	
42. Wood's,	Swatara,	C. Woods,	1,054.12	887.02	1,510.12	1,600.01	
43. Keichlein,	Heckscherville,	P. O'Connor,	.....	217.00	2,409.00	3,671.00	5,800.00
44. Cromdee,	Wadesville,	John Mullin & Co.,	.....	919.00	1,538.08	1,353.19	

45. Black Valley,	Minersville,	Edward Hoskins,	1,942.16	1,666.17	1,150.12	1,273.00	
46. Repplier,	New Castle,	John F. Quinn,	3,106.18	4,250.16	3,311.00	3,606.03	4,840.11
47. Lewis Tract,	Minersville,	Seth W. Geer,	207.18				
48. New Castle,	New Castle,	B. F. Palm & Son,		659.00	928.00	360.00	
49. W. C. Diamond,	Minersville,	J. A. Lawrence,	556.18	1,812.18	1,579.14	2,941.00	3,000.00
50. Swatara, No. 2,	Pine Grove,	John D. Felty,	1,046.05		1,237.00	1,426.02	
51. Peach Orchard,	St. Clair,	—— Evans,	1,362.07	261.00	1,998.73	1,517.04	
52. Peach Mountain,	Minersville,	William H. Harris,				2,040.00	975.00
53. Ebony,	New Castle,	Bowman & Co.,				5,077.04	
54. Newtown,	Newtown,	Miesse, Diggles & Co.,				497.00	
55. Coal Hill,	Blythe township,	Holohan & Bro.,				979.00	
56. West Lehigh,	Tamaqua,	Wood & Pearce,	16,500.00	12,000.00	7,698.17	abandoned.	
57. Chandler Tract,	Minersville,	Patrick Keenan,	100.00				
58. Chandler Tract,	do.	William Lloyd,	9.10				
59. Black Mine,	Llewellyn,	J. D. Curtz Crook,	16,357.04	5,628.00			
60. Tremont Lands,	Tremont,	Peter Laux,	131.05				
61. Furnace,	St. Clair,	John Wylam,	120.00	50.00	20.00		
62. Middleport,	Middleport,	Louis Lorenz,	6,600.00	1,827.17			
63. Mammoth,	New Castle,	Mahoney & Co.,	750.00				
64. Garfield,		Tim Cockill,	252.04				
65. Keim & Repp,		S. B. Myers,	165.00		358.00		
66. Dundas, No. 7,		Davis & Co.,	5,000.00	9,981.17	3,646.00	abandoned.	
67. North Dale,		John B. Church,		2,968.00			
68. Jonestown,		T. F. Quinn,		350.00			
69. Oakwood,		John Botham & Co.,		1,000.00			
70. Morning Star,		Whyms & Morgan,		560.00			
71. Black Heath,		George Kantner,		729.00	1,654.00		
72. Pinedale,		W. H. Slemmer & Co.,			800.00		9,175.00
73. Tamaqua,		Draper & Wittich,			385.10		
74. Small operators,				411.00	4,196.00	661.10	
75. West Brookside,	Tower City, Schuylkill county,	Phila. and Reading Coal and Iron Co.,		Transferred from Shamokin Division			290,471.03
76. Allen,	Tamaqua,	Dunkelberger & Co.,					2,006.00
Total,			1,726,089.12	1,612,526.16	1,759,588.17	1,679,662.07	2,164,824.19
Sold or consumed at collieries,			103,566.14	96,753.16	95,799.00	100,959.06	129,878.01
Total production,			1,829,656.06	1,709,280.12	1,855,387.17	1,780,621.13	2,294,703.00

TABLE IV.—*List of Accidents occurring in the mines of the Seventh Anthracite District for the year ended December 31, 1885.*

Date of accident.	NAME OF PERSON KILLED OR FATALLY INJURED.	Age.	Married or single.	No. of orphans.	Name of Colliery.	Location—County.	Date of investigation.	Nature and Cause of Accident in Brief.
Feb. 6	John A. Krusty,	14			Brookside,	Schuylkill,		Killed; caught by elevators.
3	James Huppert,	16			Old Lincoln,	do.	Feb. 4	Killed by a fall of rock.
5	George Keich,	16			Lehigh, No. 10,	do.	6	Killed; crushed by mine cars.
14	James Nolana,	55	Yes,		Mine Hill Gap,	do.	15	Killed; fell down the slope.
21	Henry Smith,	55	Yes,		Palmer Vein,	do.	22	Killed by a fall of coal.
26	Charles Marker,	30	No,		New Lincoln,	do.	27	Died from injuries received by a fall of slate.
March 14	Benjamin Houseknichk,	22	No,		Eagle Hill,	do.	March 14	Died from injuries received by falling off breaker.
April 20	Charles Christ,	23			Old Lincoln,	do.	April 21	Died from injuries by being crushed between cars.
June 11	Isaac Morgan,	44	Yes,	6	Brookside,	do.		Died from injuries caused by a fall of roof.
23	David Thomas,	18			Lehigh, No. 8,	do.	June 19	Died from injuries by being crushed by cars.
July 18	Henry Gottshall,	54	Yes,	6	Otto,	do.	July 19	Killed by a fall of roof.
24	Isaac Franz,	50	Yes,	3	Brookside,	do.	25	Killed by a fall of roof.
29	William Parry,	51	Yes,	3	New Lincoln,	do.	30	Killed; struck by a plank that fell down slope.
Aug. 24	Patrick Brackerty,	60	Yes,		do.	do.	Aug. 25	Died from injuries caused by a fall of slate.
28	John McVeigh,	35	No,		Thomaston,	do.	29	Killed by a fall of coal.
Sept. 8	Charles Green,	32	No,		Brookside,	do.	Sept. 9	Killed by a fall of coal.
8	John Linn,	20	No,		Otto,	do.	10	Killed by an explosion of gas.
9	David James,	60	Yes,		Lehigh, No. 8,	do.	11	Killed by a fall of coal.
Oct. 7	Henry Reinoehl,		Yes,		New Lincoln,	do.	Oct. 8	Died from injuries caused by a fall of slate.
Nov. 25	Joseph Patten,	45	Yes,	6	Phœnix Park, No. 3,	do.	Nov. 26	Killed by a fall of roof.
25	John O'Boyle,	34	Yes,	4	Lehigh, No. 8,	do.	27	Killed; crushed between car and gangway timber.
Dec. 18	Jacob Boyer,	29	Yes,	2	Kaska Williams,	do.	Dec. 18	Died from the effect of being burnt by gas.
18	John O'Breen,	20			Phœnix Park, No. 3,	do.		Died from injuries caused by a fall of slate.

TABLE IV—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—county.	Occupation.	Nature and Cause of Accident in Brief.
Jan. 3	William Murphy,				Phœnix Park, No. 3,	Schuylkill,	Miner,	Severely injured; premature explosion shot.
5	Morris Coll,				Foster's Tunnel,	do.	Laborer,	Back hurt by a rush of coal.
7	A Hungarian,				Palmer Vein,	do.	do.	Burnt by an explosion of gas.
15	Michael Dumchu,				Lehigh, No. 8,	do.	do.	Arm broke; fell down steps at breaker.
20	James Morgan,				New Lincoln,	do.	Miner,	Thigh broken by a fall of coal.
21	John Fern,				No. 8,	do.	Laborer,	Fingers mashed.
Feb. 2	Elias Minich,				Kalmia,	do.	do.	Back hurt; a collar fell on him.
2	David Otto,				do.	do.	Miner,	Leg broken; fall of coal.
Mar. 16	John Meizingey,				Palmer Vein,	do.		Legs broken; caused by breaking of a clevis.
4	Michael Brynier,				Lehigh, No. 10,	do.	Laborer,	Hand hurt by being struck by a hammer.
26	Samuel Knight,				Kalmia,	do.	Miner,	Back hurt; a gangway collar fell on him.
April 6	John Mease,				do.	do.	Driver,	Injured by being squeezed between dirt cars.
	Kit Wilding,				Lehigh, No. 11,	do.	Miner,	Leg broken, and otherwise crushed by fall of coal.
	William Hoffman,				Lehigh, No. 10,	do.	Laborer,	Foot crushed; slipped into monkey rolls.
May 8	Thomas Armstrong,				Palmer Vein,	do.	Miner,	Severely squeezed by a fall of roof.
12	Albert Ingrain,				Lehigh, No. 11,	do.	Slate-picker,	Arm broken; fell down breaker steps.
12	William Parsell,				Thomaston,	do.	Miner,	Face and hands burned by powder.
	Henry Parsell,				do.	do.	do.	do. do. do.
14	Henry Zowling,				Lehigh, No. 10,	do.	do.	Head and arm cut by a fall of coal.
18	William Moore,				Beachwood,	do.		Burnt by an explosion of gas.
18	John Shannon,				do.	do.		do. do.
18	John Donovan,				do.	do.	Laborer,	do. do.
22	John O'Brien,				Eagle,	do.	Miner,	Two ribs fractured by a fall of coal.
23	Daniel McMichael,				Otto,	do.	do.	Back and head hurt; fall of slate.
June 3	Willliam Wilson,				do.	do.	do.	Arm broken; struck by a sledge.
3	Mat Doyle,				Phœnix Park,	do.	Laborer,	Head and body squeezed by a car.
5	Patrick Pender,				Kaska William,	do.	Miner,	Slightly injured by a fall of coal.
9	Thomas Davis,				Lehigh, No. 13,	do.	do.	Back hurt by a fall of a slate
16	Thomas Holland,				Middle Creek Shaft,	do.	Laborer,	Leg broken; caught by a lump of slate.
17	Thomas Beadle,				Kaska William,	do.	Miner,	Severely injured; premature blast.
17	Alfred Trainer,				Eagle Hill,	do.	Laborer,	Squeezed between two cars.
22	John Huber,				Lincoln,	do.	do.	Leg broken by a car.
	Morgan Jones,				Lehigh, No. 8,	do.	do.	Severely injured; premature explosion of a blast.
July 15	Henry Schwalm,				Kalmia,	do.	Miner,	Head cut, and body bruised by a fall of coal.
18	Daniel Codrington,				Lehigh, No. 9,	do.	do.	Badly cut by a fall of slate.
21	William O'Neill,				Thomaston,	do.	Laborer,	Arm broken; struck by a piece of coal.
24	William Shadel,				Brookside,	do.		Severely injured by a fall of slate.

TABLE IV--*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location--county.	Occupation.	Nature and Cause of Accident in Brief.
July 24	John Finley,				Lehigh, No. 11,	Schuylkill,	Laborer,	Burnt about the eyes by his lamp.
25	David S. Davis,				Lehigh, No. 8,	do.	do.	Wrist broken; struck by a hammer.
25	Peter O'Neill,				Lehigh, No. 10,	do.	Miner,	Ankle sprained; fall of coal.
25	George Getz,				Lehigh, No. 11,	do.	Driver,	Thigh squeezed by a car.
Aug. 6	Thomas Kennedy,				Richardson,	do.	Miner,	Shoulder-blade broken; fall of coal.
7	Edward Gleason,				Phœnix Park, No. 3,	do.	do.	Injured by falling down a manway.
8	Amos Schwaim,				Kaluia,	do.	Driver,	Collar-bone dislocated; bumped by cars.
14	James Conner,				Kaska William,	do.	Miner,	Slightly injured; fall of coal.
19	Thomas Moran,				do.	do.	Laborer,	Injured by being jammed between car and prop.
20	James Close,				Thomaston,	do	Miner,	Leg broken by a fall of coal.
21	Thomas Jones,				Glendower,	do.	do.	Head and body bruised; fell down a manway.
Sept. 1	John Evans,				Lehigh, No. 8,	do.	do.	Arm and hand severely injured by an explosion of dynamite, whilst charging a hoe.
7	Mike Doland,				Otto,	do.	Driver,	Wrist broken; caught between car and top.
	Ed. Hoskins,				Lehigh, No. 8,	do.	Miner,	Bruised about head and body; fell part way down slope.
	James Reilly,				Brookside;	do.	Driver,	Leg severely injured by being crushed by car.
	John Lundy,				Eagle Hill,	do.		Head and body cut and bruised; coal flying from a shot.
8	James Larken,				Otto,	do.	Miner,	Burnt by an explosion of gas.
8	Robert Frew,				do.	do.	do.	do. do.
8	Alexander Frew,				do.	do.	do.	do. do.
8	John Frew,				do.	do.	do.	do. do.
8	James Graham,				do.	do.		do. do.
8	James Willson,				do.	do.		do. do.
8	Charles McCalla,				do.	do.		do. do.
8	James Lynch,				do.	do.		do. do.
8	Frank Reilly,				do.	do.		do. do.
8	Barney McGovern,				do.	do.		do. do.
8	Robert Lynn,				do.	do.	Miner,	do. do.
23	James Keely,				Glendower,	do.	Driver,	Back and hips squeezed between cars.
Oct. 9	Philip Lutz,				Kaska William,	do.	Miner,	Slightly burnt by an explosion of gas.
9	Jacob Keep,				do.	do.	do.	do. do.
12	William Cockron,				Eagle,	do.	do.	Severely injured by a fall of coal.
14	John Gammel,				Brookside,	do.	do.	Leg broken by a fall of coal.
19	John Bryant,				Lehigh, No. 8,	do.	Laborer,	Leg broken by clay falling on him.
28	John Moran,				Palmer Vein,	do.		Slightly burnt by powder.

Nov.	7	James Sullivan,		Eagle Hill,	do.	Laborer,	Body bruised; caught by cars.
	12	Solomon Barr,		New Lincoln,	do.	do.	Caught between car and top of slope.
	18	August. Hellman,		Beechwood,	do.	do.	Back hurt; caught between car and gate.
	24	Alexander Snedding,		Lehigh, No. 11,	do.	Miner,	Leg and jaw broken by a fall of slate.
	30	Samuel Bone,		Lehigh, No. 10,	do.	do.	Leg severely bruised by a fall of coal.
Dec.	2	Thomas Moore,		Lehigh, No. 8,	do.	do.	Wrist broken whilst playing with boys.
	9	Daniel Rogers,		Lehigh, No. 11,	do.	Slate-picker,	Back hurt; fell off a dirt car.

Comparative Statement of casualties, tonnage, and employés for six years in the Seventh or Pottsville Division of Mining District of Schuylkill.

YEARS.	Killed.	Injured.	Total.	Total number of employés.	Number of employés to each casualty.	Total number of tons of coal mined.	Number of tons of coal mined to each fatal casualty.	Number of tons of coal mined to each non-fatal casualty.	Ratio of tons of coal mined to casualties.	Number of tons of coal produced per each employé.
1880,	15	129	144	6,913	$53\frac{1}{2}$	1,461,070	97,404	11,362	10,146	211
1881,	18	173	191	6,479	$34\frac{31}{191}$	1,829,656	101,647	10,516	9,579	281
1882,	20	91	111	6,632	$59\frac{83}{111}$	1,709,280	85,464	18,783	15,398	257
1883,	19	74	93	7,075	75	1,855,387	97,651	25,072	19,950	262
1884,	15	61	76	7,114	$93\frac{23}{38}$	1,780,621	118,708	29,190	24,745	250
1885,	23	79	102	7,616	$74\frac{68}{102}$	2,294,703	$99,769\frac{7}{100}$	29,059	22,479	301
Totals,	110	607	717	41,829	388	10,930,717	600,643	123,982	102,297	1,562
Averages,	$18\frac{2}{6}$	$101\frac{1}{6}$	$119\frac{3}{6}$	$6,974\frac{3}{6}$	$64\frac{4}{6}$	1,821,786	$100,107\frac{1}{6}$	$20,663\frac{4}{6}$	$17,049\frac{3}{6}$	$260\frac{33}{100}$

APPENDIX

TO

ANTHRACITE MINE REPORT.

A SPECIAL REPORT

ON THE

NANTICOKE MINE DISASTER,

AT THE

NO. 1 SLOPE, DECEMBER 18, 1885.

Prepared by G. M. Williams, Inspector of Mines, at the request of the Governor of Pennsylvania.

OFFICE OF INSPECTOR OF MINES,
WILKES-BARRE, PA., *July 31, 1886.*

To His Excellency ROBERT E. PATTISON,
Governor of Pennsylvania:

SIR: In response to your respectful request of June 24, 1886, I have the honor of presenting herewith a special report on the disaster of December 18, 1885, at the No. 1 Slope of the Susquehanna Coal Company, at Nanticoke, Pa.

It contains a full history of the disaster; the circumstances which caused it; the efforts made to rescue the imprisoned workmen while the impression was entertained that they were possibly living, and the work done towards recovering the bodies after it became evident that they were dead. I have endeavored to explain the situation fully as I understand it, and I hope it will prove satisfactory for the purpose for which it was intended.

I have the honor to be,

Your obedient servant,

G. M. WILLIAMS,
Inspector of Mines, Third Anthracite District.

LETTER OF THE GOVERNOR REQUESTING A REPORT.

EXECUTIVE DEPARTMENT,
HARRISBURG, *June 24 1886.*

Mr. G. M. WILLIAMS,
Inspector of Mines, Wilkes-Barre, Pa.:

SIR: Herewith I forward to you a translation of a letter in relation to the disinterre l bodies of the victims of the Nanticoke mine disaster, and I respectfully request that if the mine is in your district, you will investigate the matter the inclosed letter refers to, and report to me, and that if the mine is not in your district, you will please hand this communication and inclosure to the proper inspector, that he may investigate the matter and report to me.

Very truly yours,

ROBT. E. PATTISON,
Governor.

PETITION TO THE GOVERNOR.

The relatives of some of the coal-miners who some months ago were buried alive at Nanticoke, implore the Governor to use his influence for the disinterring of them. Two of those that signed their names to this petition to the Governor are the parents of some of the victims of that catastrophe. One has a son amongst them, another three sons, who, as they a lege, were the chief support of their bereaved parents. They say that there may be a possibility of some of the victims being yet alive, but, at any rate, they wish them to be disinterred and buried in consecrated ground.

They further state that the company has not done its duty in regard to the digging out of the unfortunate, and they beseech the Governor to induce the superintendent, Mr. G. Morgan, of Nanticoke to make the most strenuous efforts for the recovery of their bodies, whether alive or dead.

The petitioners also state that the company, and especially the above-named superintendent, showed an indifference in this matter which verges on heartlessness. For seven weeks all efforts for the disinterring of the bodies have ceased completely, and they appeal to a humane Governor to use his powerful influence in this matter.

They further say that for year and year they have worked hard, and sometimes for very scanty pay, in order to support themselves and family honestly, and they hope that this their reasonable request will not be disregarded.

One of the petitioners states that he has fought for his country as a soldier and has ever done his duty as a citizen, and that he expects the Governor to cause the digging for the recovery of the bodies to be immediately resumed.

Some men, the petitioners state, have volunteered their services for this purpose, (to continue the digging,) but the company has thus far persistently rejected their offers and prevented them from carrying out their humane undertaking.

They finally entreat the Governor to cause a commission to be at once appointed, which is to investigate this matter and report the results of their investigation.

(Signed)

WILLIAM ELKE,
MRS. M. K. ELKE,
WILLIAM KIVLER,
MRS. E. KIVLER,
MISS MARY KIVLER,
MICHAEL LANGERS,
MRS. MAGDALIEN BUCK.

NANTICOKE, *June 14, 1886.*

TIME AND EFFECT OF THE DISASTER.

The deplorable disaster referred to in the preceding communications took place at about ten o'clock, Friday morning, December 18, 1885, in the Ross vein workings of the No. 1 slope, one of a number of coal mines owned and operated by the Susquehanna Coal Company, at Nanticoke, Pa.

Suddenly and very unexpectedly, a large body of quick-sand, saturated with water to such an extent that it flowed like liquid, broke into the mine at the face of the inner counter-gangway and rushed through the workings filling the main passages so rapidly that twenty-six persons failed to escape and were caught and perhaps killed before they had time to leave their working-places. It was one of the most unfortunate calamities, and, perhaps, the most distressing in its effects that has ever occurred in the coal mines of this region. The friends and relatives of the deceased persons were led to believe, for the first four days, that probably they had only been closed in at an open space, where the quick-sand had failed to reach them, and that possibly they might be living.

Upon finding the correct location of the "cave in," all hopes of their being living were instantly dispelled, for, to those who were familiar with the mine, it became evident that a space of sufficient area as would maintain the lives of so many persons for any length of time after the *debris* broke upon them was almost impossible. Those who were eye-witnesses of this terrible flood state that it ceased running in about one hour after it broke into the mine. In this remarkably short time, the lower portions of the workings were literally packed full of sand for a distance of more than three thousand feet from the source of the stream. It filled the chambers at some points to a height of two hundred feet from the gangway, on a rising grade of eighteen degrees. Mixed with the sand, a large number of stone boulders were found, some almost as large as a common flour-barrel, thrown up to the chambers to the same height as the sand. The sand, after the water drained out, was pressed almost as hard as a brick and the main gangway filled from floor to roof all the way to the entrance of the tunnel. A thickness of from three to four feet extended all the way down the slope and into the lower channel, a distance of over five thousand feet from the point where it broke into the mine. The quantity of water was so small that it drained off in a short time, and the increase at the pumps was hardly noticeable.

When tidings of the flood, which were immediately sent by the officers, reached the ears of the workmen below, in other lifts, they all fled out as speedily as possible. The inhabitants of the town were also shocked by the startling intelligence that a great calamity was taking place beneath them in the mines, and naturally the excitement caused thereby was intense. The following persons were found to be missing after a careful inquiry, shortly after the accident:

List of the Entombed Persons.

Oliver Kivler, miner, age thirty-two years, wife and three children.
William Kivler, laborer, age eighteen years, single.
Frank Kivler, miner, age thirty years, wife and three children. These were brothers
John W. Shutt, laborer, age twenty-eight years, wife and three children.
August Matnle, miner, age forty-five years, wife and three children.
Isaac Sarver, miner, age twenty-six years, single.
John Sarver, laborer, age twenty years, single.
Andrew Low, miner, age twenty-six years, single.
John Hawk, laborer, age twenty-six years, single.
Vincent Luke, miner, age twenty-three years, single.
Wadislaus Jeloshinski, laborer, age twenty-four years, single.
Peter Motulewick, laborer, age twenty-five years, single.

John Norwack, miner, age twenty-six years, single.
Adam Rubinski, laborer, age twenty-six years, single.
John Drajna miner, age thirty-five years, wife and three children.
John Sloff, laborer, age twenty-seven years, wife and two children.
Joseph McCarty, miner, age twenty-five years, wife, no children.
Abram Lewis, miner, age thirty-five years, wife and two children.
Edward Mathews, laborer age twenty years, single.
Thomas Williams, laborer, age twenty-two years, single.
Edward Hargraves, miner, age twenty-two years, single.
Michael Adomchick, laborer, age twenty-four years, single.
William Elkie, runner, age seventeen years, single.
Max Longoski, driver, age sixteen years, single.
William Danahay, driver, age fifteen years.
Thomas Clifford, door-boy, age fourteen years.

In all, twenty-six persons, eight of whom were married, leaving eight widows and nineteen children.

The gangway has been re-opened since a distance of more than two thousand feet, but not one of the bodies has as yet been recovered. No efforts to that effect have been made since April 21, the officials of the company being, as they say, afraid to risk the lives of the workmen and the safety of their property to proceed further with the work. It is their opinion that the bodies cannot be reached, and that the lives of the workmen would be jeopardized to an unwarrantable extent by continuing the excavation of the mine. In all the calamaties that took place in the mines of this coal field since the one that occurred at the No. 1 drift at Carbondale, January 12, 1846, the bodies of the victims have invariably been restored to their bereaved friends. In some cases, it has been done at great expense and peril, but the difficulties were such as could have been surmounted with fair assurance of safety, and, therefore, it was done. In the disaster referred to, at Carbondale, Pa., about fifty acres of ground caved in suddenly while all the men were at work in the mine, and fourteen persons were buried under it. The company kept men working constantly for a period of six weeks trying to recover their bodies, and succeeded in finding eight. The other six were never found, and they are there still. During the forty years which have passed since, so far as I know, the character of the mine calamities has been such that it has proven practicable to recover the bodies within a few days, at most, after that which caused their death occurred; but in the case of the Nanticoke disaster of December 18, 1885, seven months have passed, and not one body has been recovered. Every one connected with the coal mines is pained with the thought of abandoning them, and would be greatly gratified if they could be found. It was a singular occurrence; nothing like it has ever caused such a calamity in this region heretofore, and, before censuring any one, all the circumstances should be well considered and treated justly and without prejudice.

DESCRIPTION OF THE MINES.

The No. 1 slope entrance is about half a mile west of the center of the town of Nanticoke. It was sunk on the south dip of the Red Ash vein, the lowest workable vein in this mine. Its total length is fifteen hundred and seventy feet, and the grade of its inclination about thirteen degrees. Below it, on the same seam, the workings of No. 2 shaft, which are very extensively opened, connect; and below that again the workings of No. 1 shaft. Thus it is seen that the workings of the three mines are connected by openings, are working the same vein, and are extended to a distance of forty-five hundred and seventy feet down from the entrance of No. 1 slope. Three tunnels were driven from this seam to the Ross vein, the next workable seam above the Red Ash. The first, in which the disaster occurred, was driven from the third lift, at a distance of one hundred and fifty feet west of the slope, and a distance of eleven hundred and seventy feet from its entrance. The second tunnel was driven at the foot of the slope, and the third from the west gangway of the No. 2 shaft.

In the No. 1 slope, the Red Ash seam was nearly exhausted, and most of the output of coal was mined in the Ross seam in the first tunnel. Another lift on the same vein

was worked from the surface opening known as No. 4 tunnel. This is a water level mine, from which the nearest lift to the outcrop has been mined to a distance of about two miles west of its entrance. A part of the workings of this tunnel is shown on the accompanying map, above the workings of the first tunnel in the No. 1 slope. In No. 4 tunnel, although the workings are the nearest to the outcrop, and are driven the distance stated, no trouble from quick-sand was ever encountered. Because the river rises, on some occasions, so as to inundate the opening, a long pillar was left intact all the distance between this mine and the workings below. The gangway of No. 4 tunnel is about two hundred feet vertically higher than the gangway of the first tunnel in the No. 1 slope; the workings are on the same vein, and are higher on the pitch towards the outcrop.

The workings of the first Ross tunnel, in No. 1 slope, are shown below on the map, and these were the scene of the disaster under consideration. The tunnel is a horizontal one through the overlying rocks, a distance of four hundred and seventy feet, to where it penetrated the Ross vein. From here, the workings extend westward a distance of two thousand four hundred and fifty feet. The second opening was driven shortly after the vein was penetrated, at a point fifty feet east of the tunnel, and is terminated by a shaft about sixty feet deep, over which the ventilating fan was erected. The average thickness of the vein is from four to five feet, and the average pitch or inclination of the strata, in all the work to the north or right of the gangway and fourth counter, is about eighteen degrees. At a point one thousand eight hundred feet distant from the tunnel, the main gangway curves around the trough of an inclined synclinal. The axis of this synclinal rises to the west from ten to twelve degrees, and the fourth counter branches off at this point, and was driven up in the trough of the synclinal. Owing to the heavy grade of this counter, a connection road was made near its face to run the coal out through the third counter. This is also shown on the map near M.

From the trough of the synclinal, the main gangway passes on a south-east course, at the base of a series of breasts or chambers driven up a pitch of from thirty-three to forty-seven degrees, the heaviest pitch being at the western extremity of the fourth counter. At a distance of about six hundred feet from the trough of the synclinal, the gangway curves again, passing over an inclined anticlinal, and takes a nearly western course on the south side. The axis of this anticlinal also rises westward, on a grade of from ten to twelve degrees, so that opposite to the branch of the fourth counter, a difference of elevation of from eighty to ninety feet exists between the trough of the synclinal and the top of the anticlinal. For a distance of over three hundred feet, the face of the main gangway, on the south side of the anticlinal, was driven through a fault where the vein was pinched nearly to nothing, and the pitch is about ninety degrees. The fifth counter starts on the anticlinal, and passes a little north of the highest point, intersecting the breast driven up from the gangway, and from the fourth counter. At D, on map, a back branch gangway was driven south of the anticlinal, and nearly parallel with the gangway, but this is owing to the steep pitch, from twenty-five to thirty feet vertically higher. A number of the entombed men were working at various points in this locality as indicated on map. The fifth counter was driven up a distance of seven hundred feet beyond this back branch, and the refuse found was thrown down to the intersected breasts driven up from the gangway, and from the fourth counter. All these breasts were filled, more or less, with refuse, and walled at the bottom, except the inner one near the face at M. This was left open so the air-current could pass through it from the fifth to the fourth counter. At this hole, the pitch was forty-seven degrees, and the face of the fifth counter was forty-two feet higher, vertically, than the fourth counter road. There was a fall of at least seventy-one feet from the top of this hole to the branch of the fourth counter at the curve in the main gangway.

The fifth counter was eight yards wide all the way to a point within a distance of twenty-seven yards of the face. Here, the roof was so bad and wet, that its width had to be reduced to nine feet, and it had to be secured, also, by double timber. The water was dropping freely through the numerous interstices of the roof all along this twen-

ty-seven yards, and it became so wet and the air so far back, that they concluded to leave it stand idle until the cross-cut from below would break through, supposing, by that time, it would drain off and become dryer. This was, undoubtedly, evidence of the proximity of the quick-sand, but nobody suspected that, and they worked as usual without the slightest thought of danger. The gangways are frequently very wet in mines and though that is very inconvenient and disagreeable to the workmen, no danger is apprehended owing to its appearance, unless a dangerous body of water is known to exist somewhere near.

THE DISASTER.

The workingmen of No. 1 slope went to work, as usual, on the 18th day of December, at about seven o'clock, A. M. The mine foreman, Michael Corgan, went into the mine the same time, and walked as far as the face of the gangway, where Abram Lewis and Edward Mathews were at work. From there he returned through the workings of the back branch on the anticlinal. He saw all the men in their respective working-places; then he walked out towards the slope, and on the way met the drivers going in with empty cars. In less than one hour after that, the quick-sand broke in and did its fatal work, and the drivers whom he met are among the number who were lost. There were ten persons employed, in various places, at the face of the third counter, and they all succeeded in escaping. One heard and saw the flood approaching, and he instantly gave alarm to the others, and by wading a short distance through water to higher elevation, they all escaped to the air-shaft; and upon reaching there found the officials of the company and others ready to help them out, when they were soon brought to the surface safe. John Zeperko, a Polish miner, who was driving the fourth counter, was the first to see the flood. At the request of John Nowack, deceased, who was driving a cross-cut at the face of his place up to the fifth counter, he went up to tap on the coal so as to enable them to guess the distance they had to hole through. Zeperko states that he was at the face of the fifth counter doing this about one hour before the disaster, and that he noticed the two collars nearest to the face broken, and that more water was coming than usual. At about ten o'clock, A. M., while standing on the gangway between the air-hole M and the face, he heard the water rushing, and instantly it was flowing towards him. He shouted to the others, and simultaneously plunged in to escape. This was accomplished only by an heroic struggle of wading and swimming for a long distance. He once saw his comrades up to their shoulders in the water, struggling for life, and this was the last seen of them. Upon getting ahead of the stream, he ran with all his might and alarmed all he met at the tunnel and slope of the coming flood. With all possible speed, the men were called out of the lower tunnel, and from the No. 2 and No. 1 shafts. If the flood should continue long enough, it was evident that over four hundred persons were in danger; but, fortunately, it stopped upon reaching the tunnel at the foot of the slope.

J. A. Stearns, general manager, and George T. Morgan, were near by the head of the slope when the tidings of the disaster came out, and they at once began preparations for the relief of the men. Learning that it was impossible to enter the mine in the usual way, they went to the air-shaft, and soon after heard the men, who had escaped to that point, shouting for help. A. Rees, the general inside foreman, and Michael Corgan, the foreman of this mine, descended at once, and while the escaped men were being hoisted out, they went to explore the mine and see if it was possible to reach the other men. In the meantime, a gang of men was set to work cleaning the gangway in from the slope. A large, funnel-shaped depression was also discovered to have taken place on the culm-bank, about three thousand feet away from the entrance of the slope. This indicated the point where the cave had taken place, but at the time it was not known what portion of the mine was directly under it.

Rees and Corgan examined the mine carefully, and found the lower passages filled at all points except the face of the third counter. Here they tapped on the rib expecting that if the imprisoned men were alive, and within hearing distance, they would tap in response, but they heard nothing. During their examination, they noticed that the *debris* had reached a much higher elevation at the point marked N (see

map,) than on either side, and this led them to the conclusion that it had broken in at that point, and that probably the top of the anticlinal was not reached by the flood. In that case, there were good reasons to suppose that the men might be living, and could be saved if reached in time.

Upon their returning, a few minutes' consultation with the other officials enabled them to determine what to do, and they concluded to open a passage down through a breast directly opposite the air-hole M, leading from the fourth to the fifth counter near the faces. The course of this passage is indicated on the map by arrows. At noon Friday, A. Rees and M. Corgan led a gang of thirty men in and began the work. The sand was very wet, and had to be conveyed a long distance in buckets. The workmen were changed every six hours, and worked as faithfully as ever men did, regardless of danger, and in very foul air. Lest they should encounter fire-damp, they used no light but that of safety-lamps, which, all miners know, is a very feeble light. By Saturday, the air had become too foul for the men to work in, and an air compressor, already located at the top of the slope, was started and utilized to force fresh air into the mine. In a remarkably short time, Mr. G. T. Morgan procured three-inch gas-pipes and had them laid all the way to the top of the rescuing passage, a distance of more than four thousand feet. From here down it was conveyed by a water-hose, and the air was much improved.

By incessant work till noon, Monday, December 21, they reached the trough of the synclinal, and by this time the number of men employed on each shift was no less than sixty. The passage was very small, only three by four feet, and the buckets had to be handed from one to the other, constantly and rapidly. The work was extremely hazardous, for it was evident that the passage might close on them at any moment; but, regardless of danger, they pushed on bravely and fearlessly, as long as there was hope of saving their fellow-workmen.

At noon Monday, they reached the bottom of the air-hole M, leading to the fifth counter on the anticlinal, and they were greatly elated at their success, realizing that only nineteen yards was between them and the workings which was thought to be the harbor of the imprisoned men. They shouted, but heard no response, and though this was considered ominous, no one was discouraged. During the afternoon, several small rushes of *debris* came down from this hole admonishing them to work very cautiously. They realized that if a large rush should come it would be impossible for all to escape. The passage was about two hundred and fifty feet long on a dip of eighteen degrees, and it was a difficult matter to crawl up quick, being compelled to do so on their hands and feet. While thus cautiously working during the afternoon, a large rush burst upon them, filling the passage a distance of forty feet, which nearly caught a number of the men. This naturally caused some fear, and perhaps some depression of spirits, but the courage of the men was equal to the occasion, and believing that this was only the *debris* forced up the hole during the flood, they again went to work, and cleared it out by six o'clock that evening.

At this time the appearance of the place was much more encouraging; they could see up the air-hole as far as the light of a Clanny safety-lamp would show, and it led them to believe that a small passage was open all the way up.

This hole was rising on a pitch of forty-seven degrees, too steep to climb without steps or ladders, and these were ordered to be brought in as soon as they could be made. They hoped that after the ladders would come they would be able to go up to the fifth counter in a short time. Seven men only, were down in the passage making preparations to place the ladders in position, the others were all waiting above, thinking it better not to risk more than the number necessary for the work. Those who were down in the passage were Thomas Lloyd, John Morgan, James Turner, Lewis Morgan, Evan Dowies, John Dagnon, and John Winters. Three of these were mine foremen. Another mine foreman, Joseph Warne, and John I. Absalom, a coal inspector, were waiting at the upper end at the cross-heading.

At about seven o'clock, a strange, rumbling noise was heard, and instantly water and sand burst upon them with terrific force, and filled the passage up to a point fifteen feet higher than where it was begun. The men escaped only by the greatest ex-

ertion, and the last two had to be pulled out of the debris by the others having been caught before reaching the upper end of the passage.

It is the unanimous opinion of those who had this experience that if the sixty men had happened to be at their usual work in the passage at this time, more than half would have been caught and instantly killed.

This rush determined the fate of the entombed men beyond doubt, for it became evident that they could not be reached in the manner just tried, and all went out discouraged, and reported the occurrence to the hundreds waiting and expecting at the surface.

This second rush was a mystery to the officials, and caused them to think that perhaps a mistake was made in the location where the sand had broken into the mine, or that a second cave had taken place. In order to determine the point over which the depression on the culm-bank was, the surveyors were set to work to locate it as quickly as possible on the map. When this was done, it showed that the break was at the face of the fifth counter, on the anticlinal, and not at or near N, as they had at first supposed. Upon learning this, the great peril attending the attempted rescue became fully revealed, and made every one who knew the circumstances shudder at the very narrow escape had from another, perhaps more extensive, catastrophe. They had attempted to go up almost under the center of the cave at the point of greatest danger, and it is surprising how those who were exposed to the peril escaped.

Knowing the location of the cave, also revealed the impossibility of the entombed persons to be living, and that more than probable they were overwhelmed and buried in the sand when it broke in and rushed upon them. In justice to the officials of the company, I should state that George T. Morgan directed the work at the shaft during all the time they were at work in the attempt to rescue the entombed men. He never left his post for a minute from Friday at noon till midnight Monday night, when every hope of rescuing them was dispelled.

A. Rees, the general inside foreman, and Michael Corgan, the mine foreman of this mine, were in the mine with the workmen constantly, day and night, from the time they descended on Friday till Monday evening. These officers as well as the brave and trusty men who worked in that passage, are entitled to the highest credit and praise that can be bestowed upon them. All the mines of that company were kept idle till Wednesday, and the foremen and the most trusty workmen from all the collieries were employed in the rescuing passage, and also doing the needed attending work.

It was evident now from the result of this effort for rescue that the bodies could not be recovered for a long time, and that the work would become more or less hazardous as it advanced. Parties were steadily at work clearing the main gangway, and it was being opened at the rate of from forty to fifty feet a day, but there was a distance of nearly three thousand feet to be cleared, which could not be done in less than from two to three months at least.

When the peculiar formation of the strata and the relation of the workings thereto were taken in consideration, the probability of meeting perilous difficulties by clearing the gangway beyond a certain point approaching the curve at the synclinal was even then apparent. Many plans were suggested for the relief of the imprisoned men, such as bore-holes, shafts, &c., and all had fair consideration, but in view of the undoubted fact that the men were dead, bore-holes could not be of any practical use, and to sink a shaft through a bed of quick-sand over two hundred feet deep, and having an inexhaustible supply of water in it would take more time than it would to clear the gangway, even if it could be done successfully, which was very doubtful.

The only practicable course suggested was to clear the main gangway, and this was being done as rapidly as possible.

The Direct Cause of the Disaster.

Owing to great depth of gravel overlying the rocks at many points in the Wyoming valley, the work of mining the upper coal-seams is and will be, very hazardous. The only practicable method of finding the depth of gravel is by boring holes at points suspected to be deep, and test its depth in that manner, and also the thickness of the

rocks between it and the seam. The results obtained in this manner are very imperfect, as it tests the depth only at the point where the hole is sunk, when it may be much deeper even within a few feet off; but this is the only practicable method hitherto introduced and until a better one is discovered, no better results can be obtained.

At many points in this valley, the face of the rocks is from one to two hundred feet below the present bed of the Susquehanna river. Seams of coal, which has a covering of from fifty to over a hundred feet of rock at the slope of the mountain, are washed away at many points on the flats, and their places filled with river-wash or gravel. It was found thus at the Maltby colliery during the fore part of January, 1882, while driving a tunnel from the Eleven-Foot up to the Six-Foot seam, at a point where they supposed the latter was covered by sufficient rock to enable them to mine it with safety. A round of blasts were fired, and instantly the sand and water broke in and filled the mine so rapidly that the men barely escaped. It filled to a height of about ninety feet in the shaft, and although they made strenuous efforts to re-open the mine for several weeks, they failed even to reach the pump at the bottom of the shaft, and eventually they abandoned the mine.

At the Fuller colliery, on the night of April 23, 1884, the workings of the Six-Foot seam were lost in a similar manner. A miner fired a blast in the coal at the face of the underground slope, nine hundred feet below the level gangway at bottom of the shaft, and simultaneously water and sand broke in and filled the workings up to the top of the slope, where preparations had been made to prevent it filling further. Here they knew that the covering of rock was not over thirty feet thick, and precautionary measures had been adopted to save the men and also the main shaft.

The disaster under consideration at Nanticoke occurred at a point several thousands of feet south-west of the gap through which the river passes out of the valley over the edge of the coal measures, and seven hundred feet north of the present bed of the Newport creek.

The rocks are exposed on both sides of the creek for a distance of several hundreds of feet south-west of the bridge. Another line of outcropping rocks is exposed about nine hundred feet north of these again in the vicinity of the barn, (see map.) The rocks exposed at the side of the wagon-road, which passes the south base of the culm-bank, is about forty feet higher in elevation than the creek, and those on the north side of the bank vary from twenty to seventy-five feet higher still. A slight hollow exists on the surface between these two points, where a small stream of water drained a small territory in the region back of the culm-bank. The culm-bank covers this hollow and several sand-hills, over an area of about twenty acres, and the stream, which only exists during wet seasons, is diverted to another channel.

The positions of the exposed rocks in this region are such as would deceive the most practical geologist to come to the conclusion that no great depth of gravel could exist between them.

A casual observation would lead one to think that these were only dry sand knolls, thrown up over the face of the rocks several yards higher than the bed of the creek; but the "cave" of December 18 1885 demonstrated that there was but little, if any, thickness of rock overlying the Ross vein at this point a depth of two hundred and sixty-five feet beneath the base, or three hundred and twelve feet beneath the top of the culm-bank. A deep channel filled with gravel evidently exists between the two lines of outcropping rocks, exposed on the surface, and passes through the overlying rocks of the anticlinal described as seen in the mine. This anticlinal can be seen on the surface east of this point, lying diagonally across the valley, and passing beneath the culm-bank right under the depression caused by the cave.

The elevation of the roof of the mine under the "cave" is one hundred and thirteen feet below that of the low-water mark of the river. The depth of sand found in a number of bore-holes sunk along the edge of the canal basin varies from thirty-nine to seventy-eight feet, and no cause exists to doubt that the gravel is at a depth of from seventy to one hundred feet all along the buried channel, which caused the disaster. Everywhere along the flats of the Wyoming valley, if there exists a depth of gravel continuous from the river, the water is found at the same elevation as it is in the river,

and, evidently it is the same in the gravel of the buried channel at Nanticoke. A bore-hole was sunk by the Susquehanna Coal Company, at the request of the friends of the entombed miners, after the disaster took place, and the water was found in that at a depth of one hundred and forty feet from the top of the casing. At another time, later, when measured by A. Rees in the presence of a committee of miners, it was found at a depth of one hundred and twenty-seven feet from the top of the casing. It is also stated that the river was higher at this time than when the hole was bored. However, this suffices to show that a depth of water stands in the gravel, even after the "cave in," at nearly the same elevation as the water in the river. It was so, also no doubt, before the "cave in" took place. As before stated, the fifth counter gangway was driven up on the north slope of the anticlinal a short distance below the highest point. It was believed that there were at least two hundred feet of rock strata above, or overlying it, but the "cave" has proven that there could not have been but very little over the gangway, and, perhaps, none at all to its left, on the highest point of the anticlinal. The large mass of boulders and rounded lumps of bone and coal conveyed into the mine at the fore part of the stream, tends to show that even the coal was washed and rounded by some agent prior to this occurrence, and that probably the eroded channel extended to the floor of the seam at the top of the anticlinal to the left of the gangway. Either the thickness of the pillar on the left or the thickness of the rock roof was not sufficient to sustain the enormous pressure of the great depth of water and sand overlying, and finally it gave way, permitting the *debris* to rush into the mine as already described. No doubt, the break is very large, perhaps extending over most of the twenty-seven yards found so wet near the face of the gangway. The great quantity of *debris* conveyed into the mine, not including the water, in the short time of one hour is sufficient to prove that the break must be of a very large area, otherwise it could not pass it into the mine in that time. It rushed in under a pressure of at least one hundred and twenty-five feet head of water, two hundred and sixty-two feet depth of gravel, and a thickness of forty-seven feet of culm, or a total depth of three hundred and five feet of culm, sand, and gravel, and sufficient water to make it flow.

At all points where the depth of gravel was supposed to be so deep as to endanger the mines, or even where it was suspected to be so, it had been tested by bore-holes. The Susquehanna Coal Company had sunk over two hundred holes for this purpose, and had ascertained the depth of the sand or gravel at every point where they suspected it might exist to a dangerous depth. It was not suspected that such a depth existed at the point where this '*cave*" took place, and consequently no thought of danger existed in the minds of any one connected with this mine: in fact, its occurrence was a startling surprise to every one concerned. In view of these facts, the accident was unavoidable, as it could not have been precluded without a knowledge of the peril to which the mine was exposed.

In reference to the buried channel which was the cause of this accident, Mr. Charles A. Ashburner, geologist in charge of the Second Geological Survey of this State, describes it in a paper recently published on "The Buried Valley of Newport Creek, near Nanticoke with Special Reference to the Mine Accident of December 18, 1885," from which the following interesting extract is quoted.

After describing the channel to the west of the coal separation, it continues as follows:

"From the south end of the Susquehanna Coal Company's coal separator to the Nanticoke Gap, we have no sufficiently precise data to exactly locate the bottom of the buried valley, in the same way that the bore-holes drilled to the south-west of the separator have permitted us to locate the bottom of the valley in that section. We have, however, sufficient facts to enable us to approximately locate it.

"From the Nanticoke station, on the Lehigh and Susquehanna railroad, there is an almost continuous line of outcrops toward the south-east. About seven hundred feet north-west of this station is located the mule stable, or what is commonly known as the '*Red Barn*,' of the Susquehanna Coal Company. In the vicinity of, and to the north-west of this stable, there are exposed rock outcrops. Between the stable and the station, however, there are no outcrops, and the buried valley no doubt lies between these two points. The exact location of the buried valley from a line between

breakers Nos. 2 and 5, through the gap, cannot be determined absolutely by the facts at present at our command. Rock outcrops are found north-west of breaker No. 2 and south-east of breaker No. 5.

"A careful consideration, however, of all outcropping rocks in the Nanticoke gap, and of the bore-holes sunk by the Susquehanna Coal Company on the flat directly east of the Nanticoke bridge, suggests two or three lines as the center of the buried valley.

"Special reference to the location of the valley is deferred until a more detailed report on this subject, which it is proposed to make in conjunction with a careful topographical map now being constructed by the engineers of the Susquehanna Coal Company of the present surface of the Wyoming valley in the vicinity of Nanticoke. Additional records of bore-holes which the company propose to drill will permit of the more satisfactory consideration of this subject.

"It now remains to trace the buried valley from the southern end of the coal separator to a line between Nanticoke station (Lehigh and Susquehanna railroad) and the '*Red Barn*.' It is safe to assume, from the facts already presented, that the elevation of the bottom of the valley in the Nanticoke gap is about three hundred and ten feet above tide, and the elevation of the bottom of the valley at bore-hole No. 38 as four hundred and fifty-four feet, so that between the coal separator and the gap there must have been a fall in the valley of one hundred and forty-five feet more or less. In locating the buried valley between these two points, an important question suggests itself for consideration, and that is, does the valley fall at an even grade in this distance of about one mile, or is the grade interrupted at one or more points by water-falls?

"To the right of the county road leading from the Nanticoke station (Lehigh and Susquehanna railroad) towards the coal separator, and about one hundred feet east of the separator trestle-work, a bore-hole was drilled after the '*cave-in*' took place, as a relief measure. * * * * * * * * * * *

(The position of this hole is shown on the accompanying map and the following is a record of it:)

1. Soil, sand, etc., ...	218'	
2. Sandstone and slate, ...	53'	10'
3. Open space, ...	2 to 3'	
4. Loose material, ...	2' to 3'	

"At a depth of between one hundred and fifty and one hundred and fifty-five feet, water was encountered coming from the casing of the hole. The elevation of the top of the hole is about six hundred and fifty-six feet, the elevation of the solid rock encountered in the hole is four hundred and thirty-eight feet. This hole must be very near the center of the buried valley, which evidently makes a sharp turn around the south end of the separator and passes over the mine workings in the vicinity of the bore-hole.

"The slope of the bottom of the buried valley, between hole No. 38 and the relief bore-hole, must be at the rate of about three feet per hundred, unless there was a water-fall in the old stream occupying the buried valley between these two bore-holes. The buried valley must have approximately the position which is here suggested, since a rock exposure was found directly east of the point where the mine workings pass around the end of the anticlinal in coming from the '*cave-in*' around to the position of the relief bore-hole. The elevation of the rock exposure, at the point referred to, is five hundred and seventy-five feet above tide, or one hundred and thirty-nine feet above the solid rock first encountered in the relief bore-hole.

"In the vicinity of the '*cave-in*,' the buried valley doubtless makes a sharp turn, and pursues a north-east course to a point between the Nanticoke station and the '*Red Barn*,' already referred to. The elevation of the top of the culm bank over the '*cave-in*' was seven hundred and nine feet above tide, the elevation of the surface of the ground, at the base of the culm bank, is six hundred and sixty-two feet, and the elevation of the roof of the coal mine under the '*cave-in*,' at the point where the '*cave-in*' took place, was four hundred feet. The slate roof of the mine, between the mine workings and the bottom of the drift in the '*cave-in*' at this point, was prob-

ably three or four feet thick, so that the elevation of the solid rock under the '*cave-in*' was probably about four hundred and five feet above tide.

"If the old buried valley had a gradual slope from the relief bore-hole to the position of the '*cave-in*,' the bottom of the valley sloped at the rate of nearly eight feet in a hundred. How far this north-west course which has been suggested for the buried valley, at this point, continued north-west of the '*cave-in*,' it is impossible to surmise, since we have no facts bearing upon the location of the valley beyond the '*cave-in*.' It is probable, however, that the valley made a sharp turn in the vicinity of the '*cave-in*,' and from this turn had a more or less direct course to a point between Nanticoke station, and the '*Red Barn*.' If, between the '*cave-in*' and a line between breakers Nos. 2 and 5, the buried valley should have a regular slope, it would amount to about four feet in a hundred.

"The creek which flowed in the buried valley, as it made a sharp turn in the vicinity of the '*cave-in*,' must necessarily have produced a whirlpool in the water at this point. The diameter of this whirlpool and its depth would, of course, depend upon the amount of water flowing through the buried valley and the velocity which it had at the point where the turn was made in its course, both of which must have been considerable, from the fact that the pool contained large rounded pebbles and boulders of rocks which were evidently whirled around in the pool by the force of the water. When the old valley was ultimately buried by being filled up by the drift which it contains, these boulders and pebbles were buried in the pool by the drift. When the '*cave-in*' took place, a large mass of these boulders and pebbles was found in the gravel and soil which flowed into the mine and filled up a large part of the workings. A large number of these boulders were taken out of the mine-workings by the relief-workers, when the effort was made to get to the mines by working along the tops of the chambers of the mine-workings.

"If the pool had not existed in the bottom of the buried valley where the '*cave-in*' took place large boulders and pebbles would not have been found at this point in the valley, since there must have been a low point or '*sump*' to have held the boulders and pebbles which filled the mine at the time the '*cave-in*' took place and which low point prevented the boulders and pebbles from being rolled down the Newport buried valley and into the ancient Susquehanna river down the valley prior to the time that it was filled by drift.

"As has already been said, it is impossible to determine, with the present facts at our hand, whether the grade in the bottom of the buried valley, from the end of the coal separator to the '*cave-in*,' was a gradual one, or whether it was interrupted by rapids or falls at different points; in fact, it is possible that the low grade in the bottom of the buried valley from Bore-hole No. 14 to Bore-hole No. 38 has continued at the same rate to the edge of the '*cave-in*,' and, if this is so, there was a considerable water-fall in the old valley at the point of the '*cave-in*.' In this case, the '*cave-in*' might be classified under the head of a pot-hole. It would be different, however, from the Archbald pot-holes, from the fact that it must have been formed in pre-glacial times rather than near the end of the glacial epoch, during which the Archbald pot-holes were evidently excavated. The sharp turn that the buried valley must have taken at or near the '*cave-in*,' together with a number of other considerations, induces me to accept the former hypothesis, that is, that a whirlpool existed in the vicinity of the '*cave-in*' rather than a pot-hole.

"The latter hypothesis has, however, been more generally accepted although no special facts have been advanced by any one to support it.

"The recent discovery of the Archbald pot-holes, and a likeness in the essential features of these holes to the Nanticoke '*cave-in*,' have doubtless been the reasons why the pot-hole hypothesis has been suggested and generally accepted."

Consultation of Experts.

In view of the perplexing situation after the described failure to rescue the entombed workmen and the difficulties revealed by a knowledge of the correct location of the "*cave-in*," the general manager, I. A. Stearns, requested a number of mining experts

to meet at Nanticoke December 24, six days after the accident, for consultation as to what was best to be done in order to recover the bodies of the entombed workmen.

In response to this request, the following persons met: B. Hughes and Thomas D. Davies, general inside foremen of the Delaware, Lackawanna and Western Railroad Company, of Scranton; R. G. Brooks, superintendent of the Lackawanna Iron and Coal Company, also of Scranton; Andrew Bryden, mine superintendent of the Pennsylvania Coal Company, of Pittston; John B. Law, assistant superintendent of the same company; Thomas H. Phillips, division superintendent, and William T. Smith, inside superintendent, of the Lehigh and Wilkes-Barre Coal Company, of Wilkes-Barre, and K. M. Smith, superintendent of the Alden Coal Company, of Alden.

All these persons have had long and extensive experience with coal mines. They went over the ground where the disaster occurred, examined the maps, and had the matter fully explained and discussed. Several plans which had been suggested were deliberated upon and carefully considered, but finally it was agreed that nothing could be done better than to clear the main gangway, as the company was already doing as rapidly as possible.

On January 2, 1886, Mr. Stearns addressed a letter to each of the above persons, again asking their opinions concerning the disaster and the work in progress searching for the bodies. A copy of his letter, and of the answers received in reply, is hereby appended:

WILKES-BARRE, PA., *January 2, 1886.*

DEAR SIR: Inasmuch as you have made a careful investigation of the premises and workings of the mines where the late disaster at Nanticoke occurred, we desire, in view of your long experience in mining, to submit to you the following questions:

First. Were the mining operations conducted in the vicinity of the cave with a due regard to the safety of the mine and the men employed therein?

Second. Whether, from your knowledge of the location of the cave, the size of the pillars left in for the support of the roof, the thickness of the overlying strata, taken in connection with the rock exposures on the surface, it would have been possible for the most vigilant to have foreseen any danger at the point where the cave occurred?

Third. Has the Susquehanna Coal Company, in your opinion, through its officials, used all possible diligence to rescue the imprisoned men, and did they direct their efforts at the proper points and to the best advantage for that purpose?

Fourth. After the second filling-up of the channel opened by the rescuing party, with quicksand and *debris*, and the circumstances attending the same, would the company, in your opinion, have been justified in continuing the search at that point, in view of the imminent risk of the lives of the men prosecuting the work?

Fifth. Whether, in your opinion, the plan which the company is pursuing is the most judicious and speedy one for recovering the bodies of the men?

Sixth. Whether, in your opinion, the bodies of all the men can be recovered without great risk to the lives of the men engaged in the search?

Yours respectfully,

IRVING A. STEARNS,
Manager.

THE PENNSYLVANIA COAL COMPANY,
PITTSTON, PA., *January 4, 1886.*

IRVING A. STEARNS, *Esq.*,
Manager Susquehanna Coal Company, Wilkes-Barre, Pa.:

DEAR SIR: Having been called upon to meet yourself, Messrs. Morgan, Reese, and others, at Nanticoke, for the purpose of consulting in relation to matters connected with the late accident at one of your mines at that place, after showing us the map of mines, etc., and taking us over the ground to the cave and explaining the position of matters inside and out, at, and near that point, and detailing the various efforts made

by the officers and men to rescue the unfortunate persons inclosed therein, even at the great risk of their own lives.

Being asked to give my opinions in relation to the same by letter, I now take great pleasure in doing so, as I believe that every effort has been made that officers and men could make to reach the point most likely to contain some of the persons inclosed therein, and as it proved, they did so at the great risk of their own lives when driven out by the second cave, which came so near catching some of the men. The following are my decided opinions in regard to the questions propounded:

First. From the explanations of officers, taken in connection with map of the workings of the ill-fated mine, I would say, that the mining has been conducted in a proper manner, and with a view to the safety of the men and the property of the company.

Second. From the location of the cave, being on a hill, and the rock exposed upon the surface not far distant, with no creek or marsh near by, and from actual levelings, showing the depth of the natural strata or material overlying the vein to be two hundred and sixty-two feet, no person could foresee or anticipate danger from such a source; it is very evident that but little rock covered the vein at that point, or such an accident could not have occurred in a vein so small.

Third. From everything I could learn, it is my opinion that the Susquehanna Coal Company, through its capable and worthy officials, have used all proper diligence to rescue the imprisoned or entombed men, and have directed their efforts at the nearest and proper points, and to the best advantage, until driven out by the second cave or rush of quick-sand.

Fourth. After the second cave or filling in of the channel opened by the rescuing party with quick-sand and water, whereby the men were driven out at the imminent peril of their lives, I would not consider the company justified in prosecuting the search further at that point.

Fifth. The plan which the company is now pursuing in opening up the main passage is the most judicious, safe, and speedy way for recovering the bodies of the entombed men.

Sixth. I think it is very doubtful whether you can ever recover the bodies of all; if any are near the cave it will be impossible to find them, as you cannot work very near it without imperiling the lives of those engaged in the search.

After passing the point where the gangway turns around the basin, the work will become very hazardous on account of the steep pitching of the vein southwards, where some of the men are expected to be found. If the water has ceased to flow freely from the cave, and the break has choked or puddled up, then I would consider the risk too great to prosecute the search farther west, and would not advise the cleaning of the gangway farther until all entrances or openings west and south are properly secured, so that no sand or water could rush in upon them from those points.

Yours respectfully,

(Signed) ANDREW BRYDEN,
Mine Superintendent.

THE PENNSYLVANIA COAL COMPANY,
PITTSTON, PA., *January 4, 1886.*

MR. IRVING A. STEARNS,
Manager Susquehanna Coal Company:

DEAR SIR: Having made a careful examination of the plans and elevations of the workings in the Ross seam of No. 1 slope, and have gone over the surface about the cave and examined the rock exposures on the surface, I submit the following as my opinion:

From the plan of your workings, I would give it as my opinion that the mining operations were conducted with a due regard to the safety of the mine and the men employed; that the size of the pillars was ample, had the thickness of the overlying strata been such as the rock exposures on the surface would naturally have led any party to believe, and I would have no hesitation in saying that the most vigilant

might have been deceived and never have foreseen any danger at the point where the cave occurred; I believe the Susquehanna Coal Company, through its officials, has used all possible diligence in trying to rescue the imprisoned men, and I believe their efforts were directed at the proper points and to the best advantage possible.

After the second filling-up of the channel made by the rescuing party and the circumstances attending the same, in my opinion, the company would not have been justified in continuing the search from this point, on account of the imminent risk of the lives of those prosecuting the work.

The plan now being pursued by the company I believe to be the most judicious and speedy one for the recovery of the bodies, and, I think, until the basin or synclinal is reached will be a comparatively safe one. After that point is reached, the closing back of this class of material and the working up a pitch of forty-five degrees in said material, with the possibility of a rush of the same at any moment, I consider will be a very difficult and dangerous undertaking, and I cannot say otherwise than, in my opinion, there would be great risk to the lives of the men thus employed.

Yours respectfully,

(Signed) JOHN B. LAW,
Asst. Supt. of Mines, Penna. Coal Company, Pittston, Pa.

ALDEN COAL COMPANY,
ALDEN, PA., *January 4, 1886.*

Mr. IRVING A. STEARNS
Manager Susquehanna Coal Company, &c.:

DEAR SIR: Your communication, with maps, in relation to the late misfortune in the Nanticoke mines carefully noted.

In reply, state we most positively affirm paragraphs one and five. In regard to the second, unhesitatingly say it was not possible to foresee the disaster.

Our answer to the third and fourth is, we believe ALL has been done that was possible, but in view of the additional knowledge gained since as to the proper location of the cave, the effort at this point should not have been made.

Sixth. At present, we are of the opinion that all the bodies cannot be recovered without too great a risk. However, this is a question of the future and can only be determined as your present work advances.

Yours respectfully,

(Signed) K. M. SMITH,
Superintendent.

LEHIGH AND WILKES-BARRE COAL COMPANY,
WILKES-BARRE, PA., *January 5, 1886.*

IRVING A. STEARNS, Esq.,
Manager Coal Properties Pennsylvania Railroad Company:

DEAR SIR: Acknowledging receipt of yours of second inst., we would state that we were of the number who, at your invitation, met at Nanticoke on December 24 last, for the purpose of discussing the recent disaster in the Ross vein of slope No. 1, Susquehanna Coal Company, and the best method to be adopted for the recovery of the bodies therein entombed.

After a full and free expression of opinion on the part of all present, with a map of the workings before us, and afterwards a personal visit to a portion of the workings, we beg leave to present the following as our opinion:

First. That the mining operations on this level of the Ross vein, and particularly in the vicinity of the "cave," were so conducted as to provide a sufficient margin of safety for both the workmen and the mine, under circumstances and conditions such as we would ordinarily expect to meet.

Second. From the thickness of the overlying strata and the rock exposures on the surface, we consider that the pillars left in for the support of the roof were amply sufficient for that purpose; that the accident was not caused by weak pillars or insufficient

propping, later surveys having shown that the "cave" occurred at a point in the mine toward which the chambers were only approaching, and where nothing but the gangway had yet been opened; that this was an extraordinary case, the existence of which there was no reason to suspect, and the conditions were such that, even with the utmost vigilance and care, the danger which existed at this point could not have been foreseen or averted. We hold the opinion, from the evidences and facts in the case, that at some time in the past there was here formed what is known as a "pot-hole," reaching to, or possibly through and beyond, the vein in question; that this hole became filled with sand and sufficient water to keep it in a fluid state; that because of this fluid condition, it exerted pressure in all directions; that the upper gangway on the north side of the anticlinal approached so near to the edge of this hole that the resistance offered by the intervening coal was no longer able to withstand the pressure exerted against it by the water and sand, and that the barrier suddenly gave way, liberating, almost instantly, a volume of sand so large that, at the distance of half a mile from the source of the accident, a tunnel four hundred feet in length was so completely filled with it that the hand of man could not have done it so effectually.

Third. Acting upon the knowledge then at hand, and the conclusions arrived at from the apparent location of the "cave" as indicated from appearances inside, the efforts put forth by the officials of your company for the rescue of the imprisoned men, immediately after the accident were directed to the best advantage for that purpose, and the work was prosecuted with all diligence. Later developments lead us to think that the work if prosecuted at any other point, could not have been any more successful, and must have met with the same result.

Fourth. After the second rush of sand and *debris* filling the opening which had been made, and forcing its way up the incline some twenty feet farther than the line first reached, and from which the relief operations were commenced, and the miraculous escape of the entire rescuing party from the same fate that befell their imprisoned brethren, we think it would have been suicidal to have further continued the search at that point; it could not have been done except at the imminent risk of loss of life on the part of those engaged in the search, and the company would not have been justified in incurring this risk.

Fifth. We think that the plan now being pursued by the company for the recovery of bodies, viz: The clearing of the main gangway, and the making of safety-holes up through and to the surface of the sand-filling, as a way of retreat in case of another rush, is the safest, surest, and most speedy for the attainment of the desired end.

Sixth. It would be impossible to say where the bodies would be found, but we are of the opinion that the inflow of sand was so sudden as to give the men no time to escape, and the greatest number of them, if found at all, will be found in or near their working-places.

The work of recovery can, probably, be prosecuted with safety as far as the synclinal axis, or a foot of the gangway running up the basin, but we consider it extremely doubtful if any bodies beyond that point, and especially above the level of the main gangway, can be recovered.

Unless the work now being prosecuted should develop some new features which would throw more light on the subject, and change the conditions as we now see them, it could not be done except at great risk to the rescuing party, and the probability that the lives of some, if not all of them, would be sacrificed in the attempt.

We have the honor to be,

Yours very respectfully,

(Signed) THOMAS H. PHILLIPS,
Division Superintendent L. & W. B Coal Co.

(Signed) WILLIAM T. SMITH,
Inside Superintendent L. & W. B. Coal Co.

LACKAWANNA IRON AND COAL COMPANY,
SCRANTON, PA., *January 8, 18 6.*

I. A. STEARNS,

General Manager Susquehanna Coal Company:

DEAR SIR: In view of my having been on the ground and examined carefully the map of your Ross vein you ask that I give my opinion relative to the late disaster at Nanticoke. As to the mining in vicinity of cave, also as to the course pursued in your endeavor to rescue the entombed men, would say:

First. I consider the mining operations in vicinity of cave have been done with evident care for the safety of the mine and employés.

Second. Taking into consideration the thickness of vein, the size of the pillars left for support, the fact that you have never found, (if my memory serves me rightly,) more than ninety-six feet of surface at any point in that locality, knowing, as you did, that you had about two hundred and seventy feet from top of vein to top of surface, and that the rock is exposed upon the surface at several points in the vicinity of the cave, and it would have been, in my opinion, impossible for any person, no matter how great his experience, to have foreseen any danger.

Third. I consider, from what I have been able to learn, that the officials of the company have done all in their power to rescue the imprisoned men. It is evident to me that if it were possible to rescue the men in time to save their lives, the *quickest*, and perhaps the *only* possible course, though very risky for the rescuing party, was pursued.

Fourth. After the filling up of the channel where the rescuing party were engaged with quick-sand and other *debris*, it would, in my judgment, have been unwise, if not folly, on the part of the company, to have asked their men to again take the great risk they had just taken, for, from the moment the second filling occurred, there was no hope of finding the men alive.

Fifth. The plan which the company is pursuing is I believe, the most judicious, as the bodies may be found in the sand at different points along the gangway.

Sixth. I don't think, taking into consideration the pitch of the vein from all directions towards the gangway in which the rescuing party would necessarily be engaged, together with the possibility of finding the quick-sand, etc., in almost a liquid state, that all the bodies can be recovered without running considerable risk of losing more lives.

Very respectfully yours,
R. G. BROOKS,
Superintendent.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY,
OFFICE OF THE COAL DEPARTMENT,
SCRANTON, PA., *January 18, 1886.*

IRVING A. STEARNS, *Esq.:*

DEAR SIR: We beg leave to answer your questions as follows:

First. Were the mining operations conducted in the vicinity of the cave with a due regard to the safety of the mine and the men employed therein?

A. In our judgment, they were.

Second. Whether, from your knowledge of the location of the cave, the size of the pillars left in for the support of the roof, the thickness of the overlying strata, taken in connection with the rock exposures on the surface, it would have been possible for the most vigilant to have foreseen any danger at the point where the cave occurred?

A. No. We would believe it entirely safe.

Third. Has the Susquehanna Coal Company, in your opinion, through its officials, used all possible diligence to rescue the imprisoned men, and did they direct their efforts at the proper points, and to the best advantage for the purpose?

A. Yes.

Fourth. After the second filling-up of the channel, opened by the rescuing party, with quick-sand and *debris*, and the circumstances attending the same, would the company, in your opinion, have been justified in continuing the search at that point, in view of the imminent risk of the lives of the men prosecuting the work?

A. No.

Fifth. Whether, in your opinion, the plan which the company is pursuing is the most judicious and speedy one for recovering the bodies of the men?

A. Yes.

Sixth. Whether, in your opinion, the bodies of all the men can be recovered without great risk to the lives of the men engaged in the search?

A. We doubt it very much, if all the bodies can be recovered. The removal of sand and dirt, in which some of the bodies are probably buried, and through which you must pass to reach the chambers where the men were working, cannot be made without great risk and danger to those employed in doing it.

(Signed) B. HUGHES,
General Mine Foreman D., L. and W. R. R. Co.
T. D. DAVIES,
Assistant General Mine Foreman D., L. and W. R. R. Co.

The gangway was being cleared as rapidly as possible. Four men were employed on each shift of eight hours, beside the drivers, and the work was continued incessantly, day and night, Sundays included.

For the purpose of securing proper ventilation, and a convenient escape-way in case the sand would move again the cross-cuts were opened occasionally on the upper side, and a passage opened up to the breasts above the sand-line. A passage of this description was made at every second or third cross-cut all the way to the ninth beyond the branch of the third counter.

Lest the lower workings would be imperiled, four strong doors, hinged to a strong frame at the top, were erected at various points on the gangway, (the locations are indicated on the map,) and a man was employed to watch and be ready to close them in case the sand would make another move. Lanterns were also placed at the corners of each open cross-cut to show the entrances and also along the passage, so that if the workmen should lose their lights they could see where to escape. Thus every precaution was taken to insure safety for the workmen who were clearing the gangway.

The Relief Bore-Hole.

Some of the relatives of the entombed persons could not be persuaded to believe that all the imprisoned persons were dead, and, on or about January 17, a number of them, accompanied by the Honorable W. H. Hines called on Mr. George T. Morgan and Mr. A. Rees, both superintendents of the Nanticoke mines, and complained that the company was not doing everything that could be done for the relief of their entombed relatives, &c. The result of this was that a committee of three men from Wilkes-Barre, who had in past time been practical miners was selected by relatives of the imprisoned men to examine the situation and make suggestions to the company, if they saw fit.

This committee visited Nanticoke January 20 1886, and examined the mine and its surroundings, in company with some of the officials, who explained everything relative to the accident, and showed them the records and maps necessary to obtain full knowledge of the situation. After deliberating upon the matter, they sent the following communication to the superintendent as the result of their labor:

WILKES-BARRE, PA., *January 20, 1886.*

GEORGE T. MORGAN, ESQ.,
Superintendent Susquehanna Coal Company:

MY DEAR SIR: Our hurry to catch the train this afternoon prevented us from having a more extended conversation with you in regard to the business which brought us to Nanticoke, so we communicate to you in writing what we consider the most expedient

plan for your company to adopt for the relief of the imprisoned men and the satisfaction of their relatives. We would suggest that a hole be bored from the surface to the point we indicated on your map. By this means relief can be afforded the men if alive.

This suggestion, if adopted by the company, should be carried out at once. Our reasons for adding "all haste" is because at present every moment is precious. We also wish to extend our thanks to yourself and Messrs. Rees and Corgan for the courtesies extended and the kindness and attentions shown us in our investigations.

Truly yours,

(Signed) MICHAEL MEEHAN,
M. McNERRY,
JOHN E. EVANS,
Committee Selected by Relatives of Imprisoned Men.

Though it was evident that a bore-hole could not be of any practicable service as a measure of relief, the company concluded to have it sunk as speedily as possible, and in two days thereafter a party was engaged to sink it. It was located at the base of the culm-bank on the wagon-road, about one hundred feet east of the separator trestle, and right over the back-branch road leading from the fifth counter in the mine. The location was good, for it was near to the places where a number of the entombed persons had been working. The hole was completed at five o'clock, P. M., February 23, 1886, and the following is a record of the section passed through:

1. Soil, sand etc.,	218′	
2. Sandstone and slate,	53′	10″
3. Open space,	2′ to 3′	
4. Loose material,	2′ to 3′	

Its diameter is six inches, and it was cased by an eight-inch iron pipe to the bottom of the sand. At a depth of one hundred and forty feet from the surface, water was encountered in the casing, but when the hole broke through into the mine, the water sank, and could be heard rushing down continuously. George T. Morgan was present when it broke through, and was watching if any air escaped, thinking that if there was air compressed in the mine it could be detected escaping, but no perceptible quantity was seen. The pump was lowered several times, but it brought only black dust up, and after keeping the hole open for about half an hour, Mr. Morgan directed the workmen to have it plugged down at its entrance into the rock, so as to stop the water running into the mine.

A stream of water running into the mine at this point increased the peril of the workmen who were clearing the gangway below; consequently, as it could not be of any service by leaving it open, it was better to stop the water by plugging it, as done.

The Excavation of the Gangway Suspended.

By the middle of February, the gangway was excavated to a point within about two hundred and seventy-five feet of the curve at the trough of the synclinal. Though only a small stream of water was running, the sand, which was packed full, sank before them as they advanced to a distance of ten or twelve feet, showing that only a small quantity of water was sufficient to make it flow. They had reached a point, too, beyond which it would not be safe to open the cross-cuts and make escape passages up into the breasts. This, of course, added much to the difficulties of providing ventilation, which was found to be indispensable. The probability of the sand being in a liquid state farther in, and the whole mass extending down the steep-pitching breasts from the fifth counter, and beyond that from the source of the first rush pressing upon it, caused the officials to apprehend great danger, lest the point of equilibrium would be passed, and the sand rush upon the men again. The lesson of the second rush at the first rescuing passage was fresh upon their memories, enjoining caution, which caused them to hesitate to risk the lives of the workmen in a similar manner the second time.

To them the question was momentous and perplexing; on one hand, the relatives, friends, and the public expected them to recover the bodies of the entombed men and

restore them for proper burial; on the other, before they could be recovered the lives of a large number of persons working in the lower workings, as well as those who were employed clearing the gangway, would have to be jeopardized and placed in great peril, and that with nearly a hopeless prospect of succeeding in reaching the point where the bodies were supposed to be. Feeling the great responsibility resting upon them, and being undecided as to the proper course to take, the superintendent, Mr. George T. Morgan, addressed the following communication to the inspector of the district:

SUSQUEHANNA COAL COMPANY,
SUPERINTENDENT'S OFFICE.
NANTICOKE, PA., *February 15, 1886.*

G. M. WILLIAMS, *Esq.*,
Inspector of Mines:

DEAR SIR: By the end of this week, I am of the opinion that we shall be along the gangway in slope No. 1, to a point in which I am also of the opinion that it will be dangerous, and every foot that we proceed further, the danger will be getting greater and too risky for life for men to work in. Therefore, on Friday or Satuaday next, I shall notify the men employed therein that the company are fully satisfied to pay them their wages for said work, but will not be responsible for any accident that may occur to them, and if the men feel that it is safe and prefer to work, that they will have to do so at their own risk. I am desirous that you be present in person, or appoint some one to be present representing your office, when I notify the men of the same.

Yours respectfully,
GEORGE T. MORGAN,
Superintendent Susquehanna Coal Company.

In reply to this, the following communication was sent by the mine inspector:

DEPARTMENT OF INSPECTOR OF COAL MINES,
WILKES-BARRE, PA., *February 17, 1886.*

GEORGE T. MORGAN, Esq.,
Superintendent Susquehanna Coal Company:

DEAR SIR: In reply to your communication of the 15th instant, I wish to state that, so far, your work at the No. 1 slope towards rescuing the bodies of the missing men has been all that, in my opinion, could be done. As to the danger of proceeding further with the work of clearing the gangway, you and your assistants have better opportunities to know than I have. And, as you seem to be positive that the danger is great, it is not only wise and proper but a duty, to inform the workmen of it, and explain to them from what the danger is apprehended; so, if they choose to keep on working, they do so with a full knowledge of what you suppose they will have to contend with. The nature of the work is such that, in my judgment, the mine inspector should not interfere further than to see that every precaution is taken to insure the safety of the men at work. This has been done, and you have most readily complied with his suggestions to that effect. As you desire it, I will be present when the workmen are being informed of the situation, if you will inform me when that will take place.

Yours respectfully,
G. M. WILLIAMS,
Inspector of Mines.

At eleven o'clock, A. M., February 20, the workmen were called together at the head of the slope, and the whole situation was explained to them by Mr. Morgan and Mr. Rees; the general manager, Mr. Stearns, and the mine inspector were also present. However, the men concluded to continue at work. Then, upon learning this, the workmen employed in the lower tunnel became uneasy and apprehensive of the danger, lest the flood would start and rush upon them, and on the 27th of February, they became so distressed with the thought of their perilous situation that they left the mine, and refused to go to work. On the same day, the company concluded to barricade the sand in the gangway and abandon the search for the bodies.

A Committee Appointed by the Employees of the Susquehanna Coal Company and their Transactions.

At a meeting of the employés of the company, held during the fore part of March, a committee was appointed to call on the officers of the company to inquire if anything further could be done towards recovering the bodies of the entombed workmen. The matter was discussed in several meetings of the employés, and much dissatisfaction seemed to exist, because the efforts were abandoned. This committee called on the officers, stated their grievances, and elicited the following reply:

WILKES-BARRE, PA., *March 9, 1886.*

To the Committee of Miners appointed by the Employés of the Susquehanna Coal Company:

GENTLEMEN: Before giving a final answer to your request, we would respectfully suggest that a committee of eight or ten of the oldest and most experienced miners in the employ of the company, be appointed by the employés of the company, to confer with the officials for the purpose of discussing the question of the safety and practicability of continuing the work of rescuing the bodies of the men and boys buried in No. 1 slope.

Yours respectfully,

(Signed) IRVING A. STEARNS,
Manager.

At another meeting of the employés, held at Broadway Hall, Nanticoke, March 10, a committee of the character described in the preceding communication was appointed, consisting of the following named persons:

Job Thomas and Rees T. Lewis of No. 1 shaft.
George Orbits and William Griffiths of No. 2 shaft.
Peter Conroy and John Griffiths, of No. 1 slope.
Daniel W. Rees and Eli Hughes, of No. 2 slope.
William Jenkins and John C. Hopkins, of No. 3 slope.
Enoch Francis and James Williams, of No. 4 slope.
Thomas B. Bevan and Evan L. Davies.

This committee met at once and organized, appointing Job Thomas chairman, and Daniel Rees secretary, and on the following day, March 11, they examined the mine, the surface surroundings, the depth of the water in the relief bore-hole, the maps of the mine and records of various bore-holes. The whole situation was explained to them by the officers of the company, and also by the mine inspector, who accompanied them into the mine.

Upon completing their deliberations on the 12th of March, the following communication was prepared, signed, and presented to the officers of the company as their final conclusions:

NANTICOKE, PA., *March 12, 1886.*

At a final meeting held by the committee appointed by the employés of the Susquehanna Coal Company to inquire carefully into the conditions of the workings in No. 1 slope, and the advisability of getting the bodies of the entombed men therein, and the safety of the men employed at the said work;

Resolved, That in our opinion we consider the plan of clearing the gangway impracticable and unsafe.

Resolved, secondly, That we, as a committee, deem it our duty, in justice to all, to offer the following plan to the company as the only hope of reaching the bodies of the entombed men, namely: To drive a tunnel across the basin, starting about one hundred and twenty-five (125) feet west of station No. 67, the course of said tunnel to be about due south; and that after the tunnel has been driven one hundred (100) feet to keep a bore-hole twenty (20) feet ahead of the face of the said tunnel. And we further state, in case we find it blocked with sand, same as in present gangway, we then consider that plan impracticable and unsafe. And we further state that, in case this

plan fails, there is no other means of obtaining the bodies of the entombed men in our judgment as a committee.

(Signed) JOB THOMAS *Chairman*,
THOMAS B. BEVAN,
GEORGE ROBERTS,
PETER CONROY,
ELI HUGHES,
ENOCH FRANCIS,
WM. D. JENKINS,
REES T. LEWIS,
EVAN L. DAVIES
WILLIAM T. GRIFFITHS,
JOHN E. GRIFFITHS,
DANIEL W. REESE, *Secretary*,
JAMES WILLIAMS,
J. C. HOPKINS

Mr. George T. Morgan, on behalf of the company replied promptly as follows:

NANTICOKE, PA., *March 13, 1886.*

To the Committee appointed by the Employees of the Susquehanna Coal Company:

GENTLEMEN: Referring to that portion of your report of the 21st inst., wherein you state that "we deem it our duty, in justice to all, to offer the following plan as the only hope of reaching the bodies of the entombed men, namely: To drive a tunnel across the basin starting about one hundred and twenty-five feet west of station No. 67, the course of said tunnel to be about due south. And that after the tunnel has been driven one hundred feet, to keep a bore-hole twenty feet ahead of the face of the said tunnel. And we further state that, in case we find it blocked with sand, the same as the present gangway, we then consider it impracticable," the company desired to state that, although this plan had already been carefully considered by the company and deemed by its experts impracticable, it is nevertheless willing, (if such be the request and desire of the employés of the company, to be expressed at their general meeting to be held to-night,) to waive its former judgment. Noting, therefore, your further report that "in case this plan fail, there are no means of obtaining the bodies of the entombed men," and relying upon it, the company will at once proceed to drive the tunnel by you suggested, as a final effort, if it be the desire and request of the employés of the company as above stated.

Yours truly,

(Signed) GEORGE T. MORGAN,
Superintendent.

On the evening of March 13, a meeting of the employés was called to consider the report of the committee, and also the reply of the company, and after listening to the reports and explanations of the committee, the following resolutions were passed, and a copy, signed by the chairman, was directed to be sent to the officers of the company, as follows:

BROADWAY HALL,
NANTICOKE, PA., *March 13, 1886.*

A meeting of the employés of the Susquehanna Coal Company, held in the above-named hall, to hear the report of the committee appointed by the said employés of the company to confer with the officials in regard to the continuing of the search for the entombed miners in slope No. 1.

Resolved, That this meeting approve of the plans suggested by the committee to the company, namely: to drive a tunnel across the basin. [See agreement already submitted to the company.]

Resolved, That this meeting accept the answer of the company to the above plan and agreement referred to, to wit: Considering this the final effort in trying to recover the bodies of those entombed men in slope No. 1.

(Signed) JOB THOMAS,
Authorized Chairman of the Meeting.

On March 17, the tunnel agreed upon in the preceding communications was started, and by April 15, it was driven a distance of ninety-three feet, and, at this point, two holes were bored in advance a distance of seventy-one feet, at which distance, the sand in the gangway beyond the curve was penetrated. A quantity of water, sand, and pebbles came out through the upper hole; the lower one had broken into the gangway against a sill, so the workmen thought, and, for that reason, nothing but water could come out. At this time, the work was abandoned again, and it has remained idle ever since. Some of the committee were present when the holes broke through and saw the result; however, they met again to consider the matter, and sent two reports to the officers of the company, one signed by nine of the members, and the other by five, which were as follows:

NANTICOKE, *May 15, 1886.*

To the Officers of the Susquehanna Coal Company:

SIRS AND GENTLEMEN: At a meeting of the committee, held on the above date, the following was resolved, viz:

That we, as a committee, consider that the only thing to be done is to drive the tunnel through and complete the same.

We submit this to you as a majority report of the committee. The names of persons who voted on the above resolution are as follow:

(Signed) JOB THOMAS,
REES T. LEWIS,
PETER CONROY,
GEORGE OBERTS,
THOMAS B. BEVAN,
EVAN L. DAVIES,
WILLIAM T. GRIFFITHS,
ENOCH FRANCIS,
J. C. HOPKINS.

NANTICOKE, *May 15, 1886.*

To the Officers of the Susquehanna Coal Company.

SIRS AND GENTLEMEN: At a meeting of the committee, held on the above date, the following was resolved, viz:

That we, as a committee, are not satisfied with the present test of the tunnel, and would suggest to the company to drill another bore-hole to come out on the south side of the tunnel not less than two feet higher than the last hole drilled. In case we find black, wet sand this shall be final, but if only water, we want it drained, then drive the tunnel through.

We submit this to you as a minority. The names are as follows who voted on the resolution:

(Signed) DANIEL W. REESE,
JAMES WILLIAMS,
ELI HUGHES,
WILLIAM D. JENKINS,
JOHN E. GRIFFITHS.

N. B.—Please answer this, in writing, as soon as convenient.

This finished the transactions of this committee.

CONCLUDING REMARKS.

The Susquehanna Coal Company, after a careful consideration of all the circumstances, were convinced, as I am informed, that both the lives of the workmen and the safety of their property would be jeopardized to an unwarrantable extent by continuing the excavation of the sand or by driving the rock tunnel through into the gangway on the south side of the synclinal; consequently, the efforts to recover the bodies were indefinitely suspended, as before stated, on the 21st day of April, 1886, and nothing has been done to that effect since.

The gangway was cleared a distance of twenty-two hundred and twenty feet from the slope in seventy-one days, an average of thirty-one feet per day. I think this is

sufficient to prove that the work was energetically forced at a rate which could not have been exceeded.

Though the efficiency of a bore-hole had been discussed and considered to be of no practicable service, as it afterward proved, in two days after the friends of the entombed persons requested the company to have it bored, a party was engaged to sink it as quickly as possible, and they began as soon as the machinery could be placed in position.

The plan of driving the rock tunnel, suggested by the committee of practical miners of fourteen, had "been carefully considered by the company, and deemed by its experts impracticable." But, at the request and desire of the committee and employés of the company, they promptly consented to drive it as far as necessary to ascertain by bore-holes whether or not the gangway, beyond the curve, was full of water and sand; and on finding water and gravel coming out of the hole, as predicted, it was abandoned.

In justice to the company and to its officers, I think it my duty to state, that as long as work was continued with a view of rescuing the men or recovering their bodies, it was done energetically and with the greatest possible dispatch consistent with the safety of the workmen.

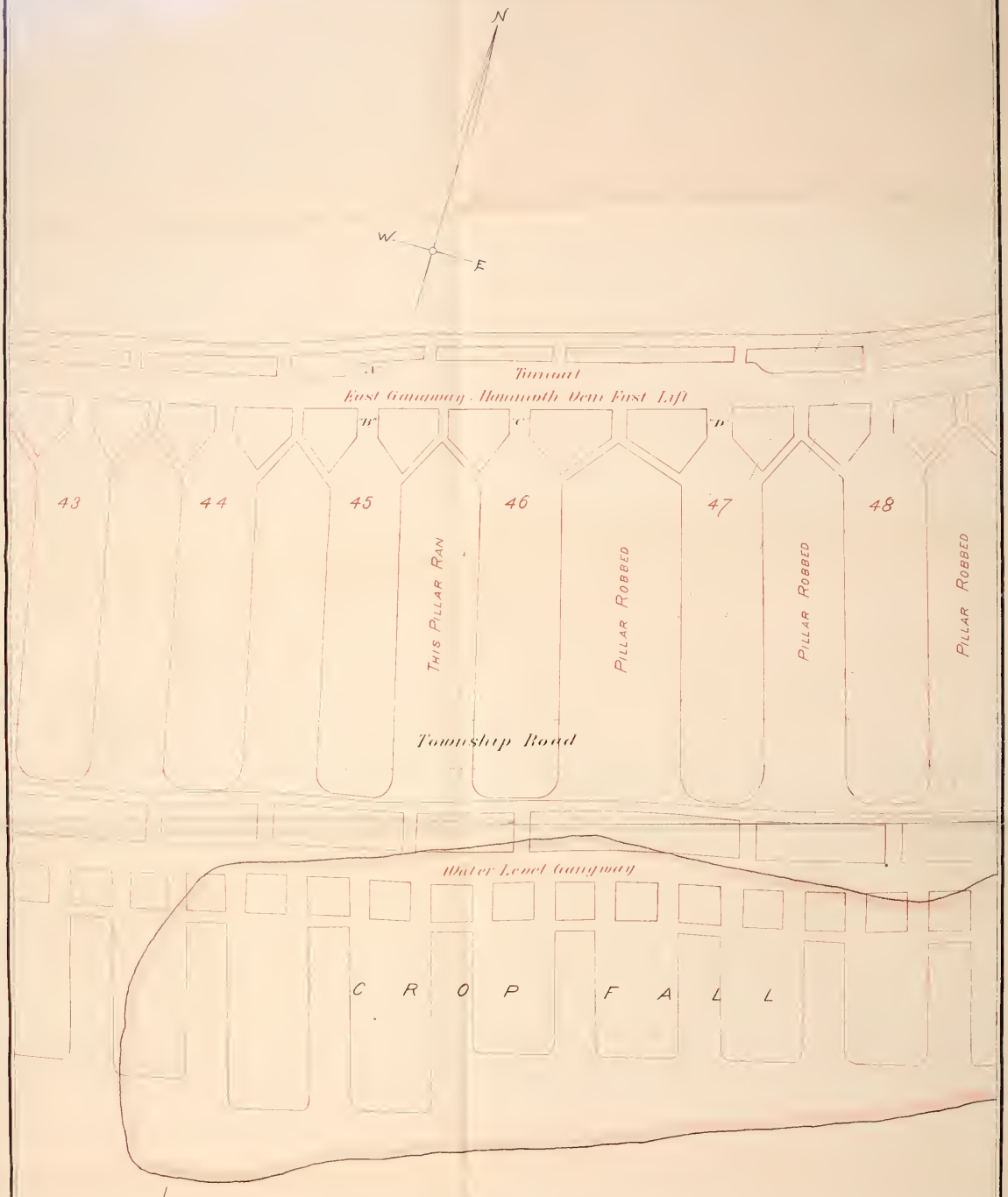
As to the practicability of recovering the bodies, the question is involved with so many uncertain conditions that it cannot be indubitably determined, only by pushing the excavations forward, regardless of all perils, until it has either proven a success or failure. A failure, in that case, especially if caused by another rush of the sand, would, most probably, result disastrously to the lives of the workmen, and, perhaps, destructive to a portion of the company's valuable property.

The sand, the culm, and the water stand to its former height over the hole where the first break occurred, and the supply of water, if coming from the river, as most likely it does, is evidently inexhaustible. This great column of *debris* is resting on the sand in the mine, ready to rush in the moment the equilibrium is broken. The fifth counter gangway under this column has a falling grade of from eight to ten degrees, and the breasts a fall of from thirty to forty degrees; consequently, the quick-sand in this portion of the mine is even bordering on a liquid state; to drive the tunnel into it, would certainly be attended with disastrous results, because, under these conditions, the quick-sand would, most assuredly, rush in again with as much force as it did at first. On the other hand, if it was possible to determine that the sand was comparatively dry, no one could determine, to any degree of certainty, the point of equilibrium or the point to which the sand might be safely removed.

All the experts who have taken pains to examine the situation hesitate to advise continuance of the search beyond the point already reached, lest to continue it might promote another disaster.

If the efforts should be renewed, no matter how it may be undertaken, extraordinary risk must be taken before the points where the bodies are supposed to be can be reached. Their remote position: the steep pitch of the breasts; the heavy grade of the counter-gangway; the peculiar formation of the strata in that locality; the probability of the quick-sand being saturated to almost a liquid condition; the great height of the column of *debris* resting upon that in the mine, and the depth and supply of water in the gravel and sand above, should all be taken in consideration, because all are unfavorable to a successful ending if the efforts should be continued.

The object of the anthracite mine law of Pennsylvania, as expressed in its title, was to 'provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith," and evidently, where there are no lives which might be saved, it would be at variance with the spirit of the law to place the lives of workmen in unwarrantable peril. For this reason, the mine inspector has deemed it his duty to refrain from advising continuance of work which might result in the loss of more lives, when there is not the slightest reason to hope that lives might be saved by it. As long as the work was in progress, he visited the mine frequently, and saw that every practicable precaution was taken to insure the safety of the workmen, and the officers of the company complied with his suggestions promptly and willingly.



A Point where Richard Hede was found May 19 '85.
B Point where Chas. Dougherty was found May 19 '85
C Point where Jas. Evans was found June 1 '85
D Point where Martin McGinns was found June 6 '85

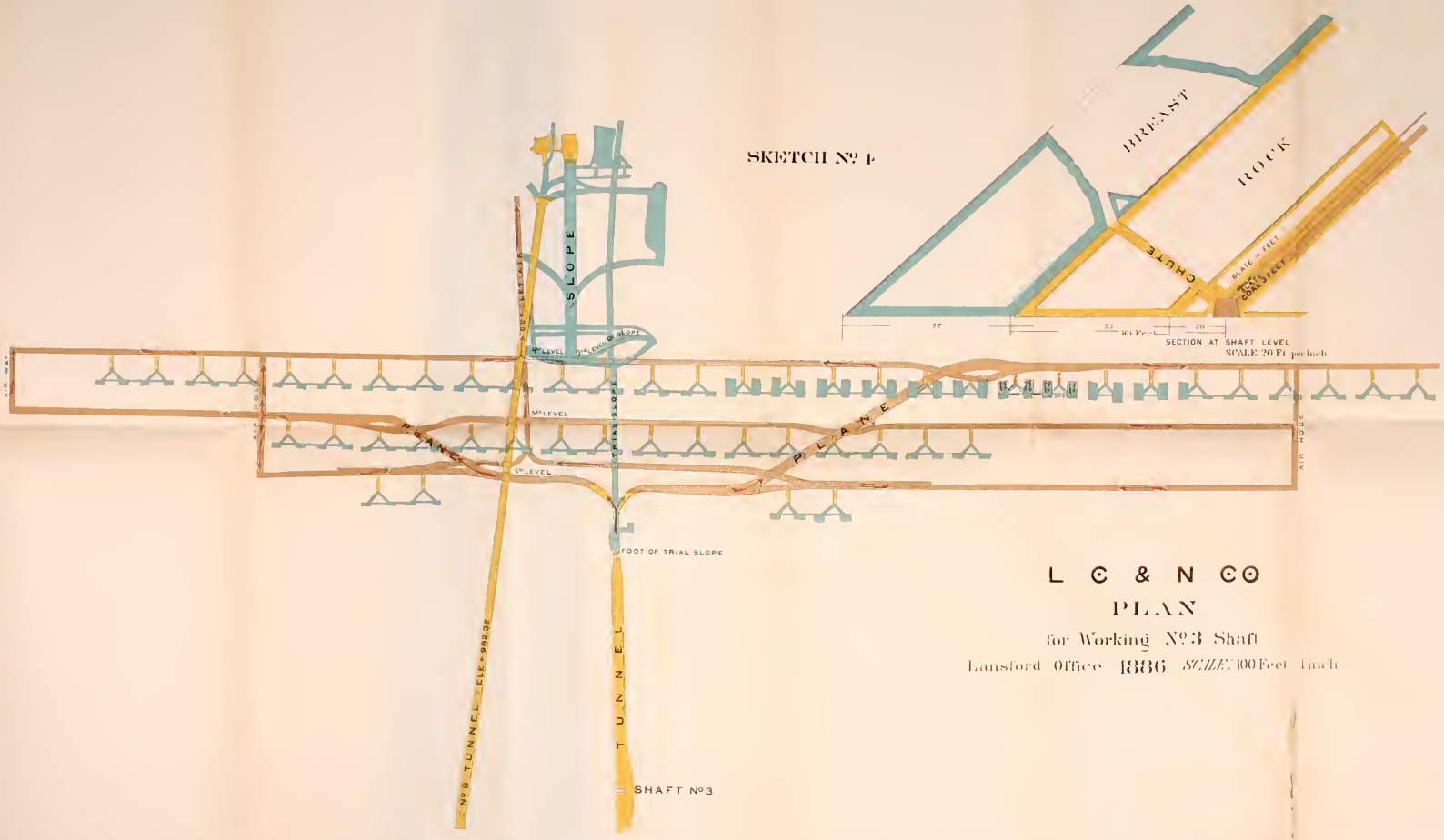
SKETCH

Showing Portion of the Working on the Mammoth Vein East Gangway First Lift

AT

North Ashland Colliery.

Scale 1 Inch 30 Feet


SKETCH Nº 1
BREAST
ROCK
CHUTE
SECTION AT SHAFT LEVEL
SCALE 20 Ft per Inch
SLOPE
4th LEVEL
5th LEVEL
6th LEVEL
PLANE
TRIAL SLOPE
FOOT OF TRIAL SLOPE
TUNNEL
SHAFT Nº3
AIR WAY
AIR HOUSE
L C & N CO
PLAN
for Working Nº3 Shaft
Lansford Office 1886 SCALE 100 Feet 1 Inch

SKETCH No 1

SHOWING

Scene of Outburst and Explosion of Gas at

OTTO COLLIERY.

SAMUEL GAY,
Inspector of Mines

SCALE 1inch = 100 feet

REFERENCES

A. *Stope on Holmes Vein.*
B. *do do Primrose Vein.*
C.C. *Gangways on Primrose Vein.*
D.D. *do do Holmes Vein.*
E. *Tunnel from Holmes Vein to Mammoth Vein.*
F. *Tunnel from Holmes Vein to Primrose Vein.*
G. *Air way where outburst of Gas occured.*
H. *Tunnel from Primrose Vein to Mammoth Vein.*
I.I. *Gangways on Mammoth Vein.*
J. *Airway on Holmes Vein.*
K. *Tunnel from Primrose Vein to Holmes Vein.*
L. *Proposed Airway to Mammoth Vein.*
M. *Face of Airway after out burst of Gas.*
N. *Ventilating Fan.*
P. *Face of airway before out burst of Gas.*

Primrose Vein
Holmes Vein.
Mammoth Vein
Air Currents.
Brattice.
Air Crossings.
Doors and Batteries

SKETCH No 1

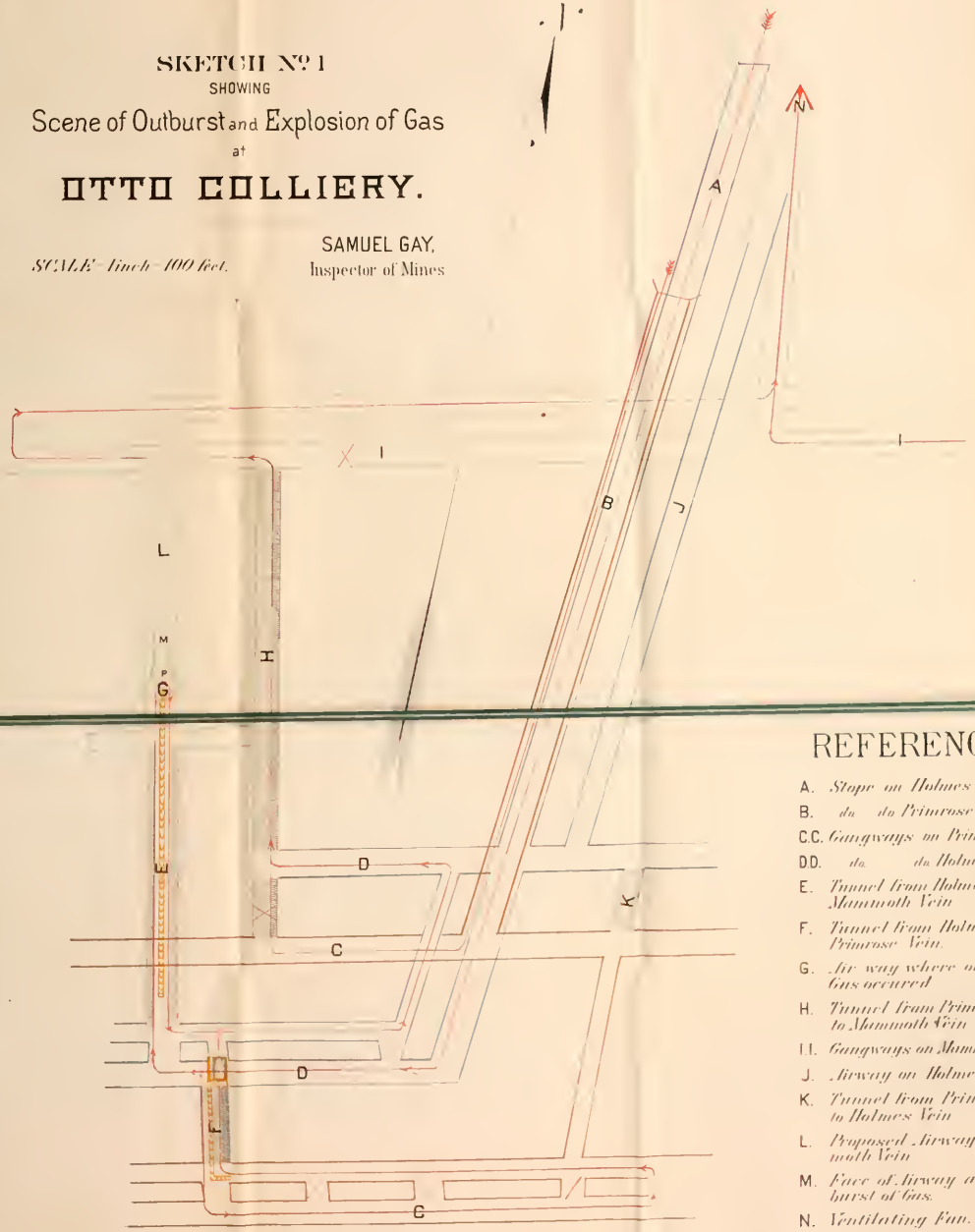
SHOWING

Scene of Outburst and Explosion of Gas at

OTTO COLLIERY.

SAMUEL GAY,
Inspector of Mines

SCALE 1 inch = 100 feet.



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M. *Face of Airway after outburst of Gas.*
N. *Ventilating Fan.*
P. *Face of airway before outburst of Gas.*

Primrose Vein
Holmes Vein.
Mammoth Vein
Air Currents
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Air Crossings
Doors and Batteries.

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